NATURE MAGAZINE

OCTOBER 1926

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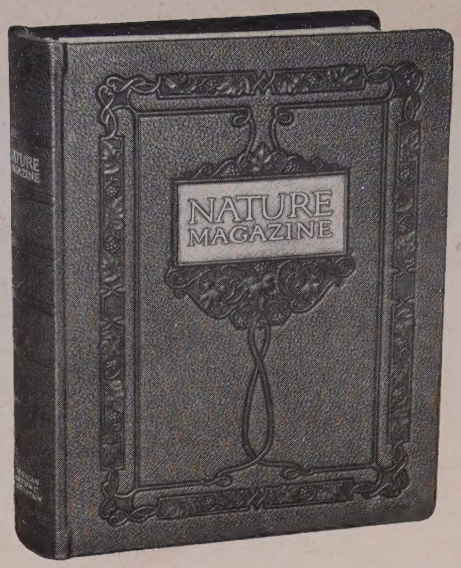

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What the Government Does

Students of nature and of the wild life of our country are likely to be somewhat informed about the conservation policies of the Federal Government, and yet it is remarkably true that many ardent students of these subjects do not know with any exactness what the Government does, or fails to do, in these respects. Very often the government departments are seriously and urgently petitioned to do something which they have been doing regularly for years.

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So many branches of the federal establishment deal with the natural life and resources of our country that Nature lovers will find much of value in this book about "Uncle Sam at work." In addition to its special appeal to students of Nature, it has of course a very large business value and an equally important patriotic and educational value. NATURE MAGAZINE has arranged to make this work by Mr. Haskin available to its readers at a very modest cost, and prints an announcement of the offer in the advertising columns of this issue.

Making Motion Pictures

Varied are the uses of the motion picture camera designed for home and amateur "shooting." When the films have recorded many events of the out-of-doors and the wild world, there is much that it can do indoors. One's own motion picture dramas can be enacted—amateur theatricals on the movie screen, so to speak. There are, however, some fine points to this as well as to outdoor photography. In this connection Bell and Howell have produced a book entitled *How to Make Your Own Motion Picture Plays*. A circular about this book can be obtained by writing to Bell and Howell Company, 1801 Larchmont Avenue, Chicago.

Readers:

See page 245 for an account of activities of the American Nature Association.

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PELMANISM is a big, vital, significant contribution to the mental life of America. I have the deep conviction that it is going to strike at the very roots of individual failure, for I see in it a new power, a *great* driving force.

I first heard of Pelmanism while in England on war work. Sooner or later almost every conversation touched on it, for the movement seemed to have the sweep of a religious conviction. Men and women of every class and circumstance were acclaiming it as a new departure in mental training that gave promise of ending that *preventable* inefficiency which acts as a brake on human progress. Even in France I did not escape the word, for thousands of officers and men were *Pelmanizing* in order to fit themselves for return to civil life.

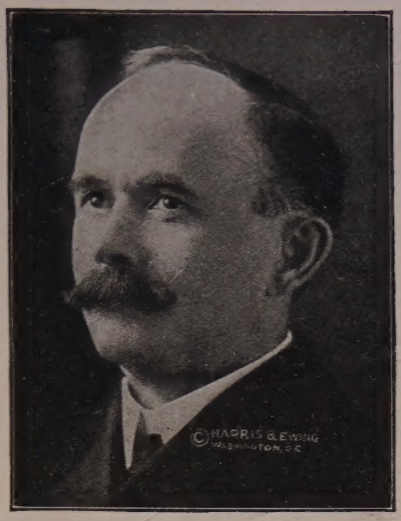
When I learned that Pelmanism had been brought to America, by Americans for Americans, I was among the first to enroll. My reasons were two: first, because I have always felt that every mind needed regular, systematic and scientific exercise, and, secondly, because I wanted to find out if Pelmanism was the thing that I could recommend to the hundreds who continually ask my advice in relation to their lives, problems and ambitions.

Failure is a sad word in any language, but it is peculiarly tragic here in America, where institutions and resources join to put success within the reach of every individual. In the twenty years that I have sat on the bench of the Juvenile Court of Denver, almost every variety of human failure has passed before me in melancholy procession. By *failure* I do not mean the merely criminal mistakes of the individual but the faults of training that keep a life from full development and complete expression.

It is to these needs and these lacks that Pelmanism comes as an answer. The "twelve little gray books" are a remarkable achievement. Not only do they contain the discoveries that science knows about the mind and its workings, but the treatment is so simple that the truths may be grasped by anyone of average education.

In plain words, what Pelmanism has done is to take psychology out of the college and put it into harness for the day's work. It lifts great, helpful truths out of the back water and plants them in the living stream.

As a matter of fact, Pelmanism ought to be the beginning of education instead of a remedy for its faults. First of all, it teaches the science of self-realization; it makes the student *discover* himself; it acquaints him with his sleeping powers and shows him how to develop them. The method is *exercise*, not of the haphazard sort, but a steady, increasing kind that brings each hidden power to full strength without strain or break.



JUDGE BEN B. LINDSEY

Judge Ben B. Lindsey is known throughout the whole civilized world for his work in the Juvenile Court of Denver. He says,

"The human mind is *not* an automatic device. It will *not* 'take care of itself.' Will-power, originality, decision, resourcefulness, imagination, initiative, courage—these things are not gifts but results. Every one of these qualities can be developed by effort, just as muscles can be developed by exercise."

The human mind is *not* an automatic device. It will *not* "take care of itself." Will-power, originality, decision, resourcefulness, imagination, initiative, courage—these things are not gifts, but results. Every one of these qualities can be developed by effort just as muscles can be developed by exercise. I do not mean by this that the individual can add to the brains that God gave him, but he can learn to make use of the brains that he has instead of letting them fall into flabbiness through disuse.

Other methods and systems that I have examined, while realizing the value of mental exercise, have made the mistake of limiting their efforts to the development of some single sense. What Pelmanism does is to consider the mind as a whole and treat it as a whole. It goes in for mental team play, training the mind as a unity.

Its big value, however, is the instructional note. Each lesson is accompanied by a work sheet that is really a progress sheet. The student goes forward under a teacher in the sense that he is followed through from first to last, helped, guided and encouraged at every turn by conscientious experts.

Pelmanism is no miracle. It calls for application. But I know of nothing that pays larger returns on an investment of one's spare time from day to day.

(*Signed*) BEN B. LINDSEY.

Note: As Judge Lindsey has pointed out, Pelmanism is neither an experiment nor a theory. For almost a quarter of a century it has been showing men and women how to lead happy, successful, well-rounded lives. 550,000 Pelmanists in every country on the globe are the guarantee of what Pelman training can do for *you*.

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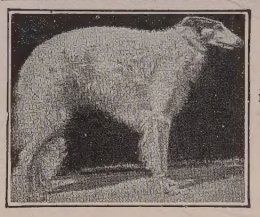

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How Insects Live

Perhaps no better description could be given of the fascinating work "How Insects Live," an elementary entomology, by Walter Housley Wellhouse, M.A., Ph.D., Associate Professor of Entomology of the Iowa State College, than is expressed in the words of the publishers, The Macmillan Company, New York; "Here is a book which reveals in a fascinating way the personalities and behavior of the members of the insect world. Locusts, spiders, butterflies, and the other tiny creatures of whose habits the average person knows so little live out their lives and weather their domestic crises here before the reader's eyes." This book concludes with suggestions for collecting and preserving insects, and keys for distinguishing the principal orders and families. As textbook, as reference book, or as simply a delightfully interesting book for general reading by those interested in the insect world, this volume will be found worth far more than its cost of $5.00. To those hitherto uninterested in the marvels of insect life, and who regard the busy little beings surging with life all about us as simply "bugs," this book will mean the discovery of a new world.

The Dog Population

Our canine population numbers some seven million assorted barks, according to estimates of the United States Department of Agriculture. The Department has issued, through the Bureau of Animal Industry, Farmers' Bulletin 1491-F on the Breeds of Dogs. A short discussion is given to 46 different breeds. No attempt, however, is made to establish a value on the great bulk of dog citizenship. If the owners were severally consulted on this point, the aggregate value would doubtless be beyond the riches of several Midases.

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Nature Calendar

OCTOBER

This is the month of the Hunter's Moon, which is the first moon after the Harvest Moon, which is the full moon nearest September 22. It brings long evenings in which to get in the needful stores for winter.

The snowy cricket has slowed down the rate of his chirps. On an evening in August one was found to be giving 156 a minute, which, according to the Dolbear formula, would indicate a temperature of about 79° F. If you subtract 40 from the number of chirps, divide the remainder by 4 and add 50 to the result, you will be able to tell the temperature without a thermometer.

> Crickets are making
> The merriest din,
> All the fields waking
> With shrill violin.
>
> Piled up leaves smoulder,
> All hazy the moon;
> Nights have grown colder,
> The frost will come soon.
>
> —Edward Bliss Reed.

The honey locust is now showing long pods, which will persist until spring. It was on the fruit of the Spanish locust, which is also a native of Syria, that John the Baptist subsisted in the wilderness (Keeler).

The locust is the favorite abiding place of the cicada, or harvest fly, the big fellow with goggle eyes that buzzes from early in July until cold weather. No individual keeps at it all that time, but there is a constant relay as they are hatched, none surviving, it is said, much more than three weeks.

Some day a killing frost will come and all the lovely red leaves of the staghorn sumac will fall almost at once. The velvety dark-red panicles, in which the fruit is now mature, will remain for the birds.

One need not fear mistaking the poison sumac for the innocent, as the poisonous variety has a grayish-white fruit in clusters from the axils. The poison ivy also has grayish-white berries, while those of the five-leaved woodbine are blue.

The ailanthus has been called a glorified sumac, and at this season, with its yellow leaves and great cluster of winged fruit, it is indeed beautiful, but it lacks the glory of the humble sumac.

The bittersweet, which gives us the lovely red berries, has many enemies besides the thoughtless searcher for household decoration. Grotesque little tree-hoppers lay their eggs on the branches in the fall and cover them up with a cottony coverlet. In the spring they hatch and spend their lives near where they began.

Monarch butterflies are migrating to the south. Dense swarms come from the northern states, and find the food they need below the autumn frosts. It is hard to believe that anything so wavering and apparently uncertain as to destination should really achieve such a migration.

The hummingbirds are off for Central America. In this case also it is hard to believe that anything so tiny should have such endurance.

Throughout the Mississippi Valley, papaws are ripe. Their banana-like fruit just escapes being something very valuable.

The first frost will make the persimmon edible. This will bring joy to opossums and opossum hunters.

As Mother Possum has about three families of six to thirteen each, which she carries about with her in her pouch for five weeks, it would seem that the hunting should be good each year. It is said that a baby opossum measures about a half inch in length at birth, and it may attain a weight of about twelve pounds.

Young red squirrels have now for the most part left home and are scampering about on their own. Woe to the unlucky family that was born late and whose mother falls beneath the gun of the hunter.

All through the month the gentians are in blossom. The closed are the most interesting; the fringed, the most beautiful. The closed have a distinct white mark at the mouth of the corolla for the guidance of the bumblebee, and no other insect is strong enough to break in and get the nectar.

The stately teazel, with its closely packed lilac or purple blossoms, is one of the most interesting of the wayside weeds. Few know that the head contains a receptacle and that the dew or rain collected in it is said to be a "sure cure for warts."

Watch for Orion between nine and ten in the evening of late October. The Pleiades, fleeing from him, are lost in the ocean, and travelers fare forth in ships at their peril.

Capella, the third brightest of the fixed stars, shines high in the heavens on the nights when birds are migrating.

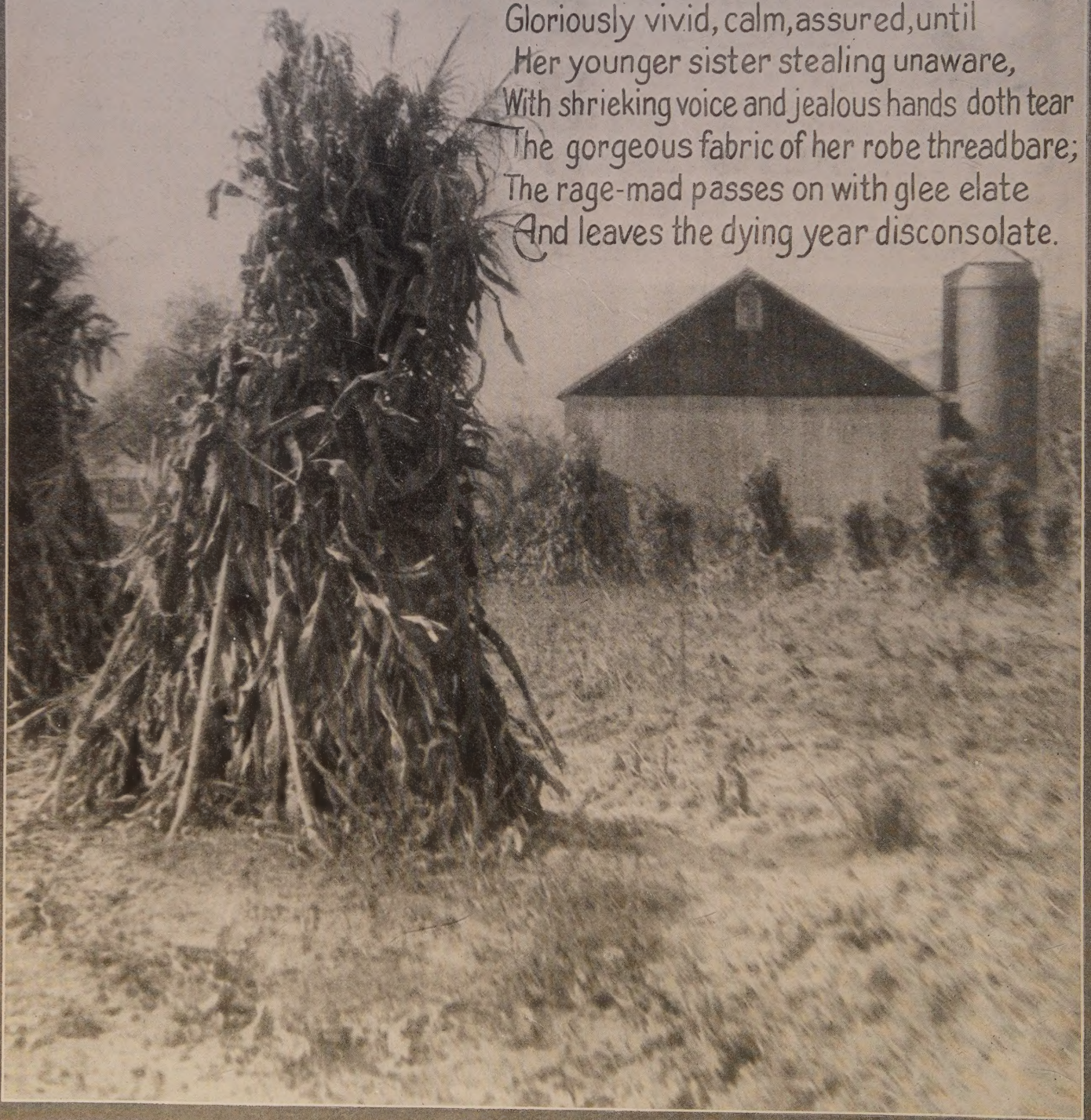
Prepared for Nature Magazine by the Cleveland Museum of Natural History

October

by

Albert Harlen Castle

Her gown is like a broidered tapestry,
Among whose folds the brilliant colors play.
She wears a mysty scarf all shot with stars,
And at her waist a riotous bouquet.
With soft shod feet she steps from hill to hill,
Gloriously vivid, calm, assured, until
Her younger sister stealing unaware,
With shrieking voice and jealous hands doth tear
The gorgeous fabric of her robe threadbare;
The rage-mad passes on with glee elate
And leaves the dying year disconsolate.



PHOTOGRAPH BY H. ARMSTRONG ROBERTS

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NATURE MAGAZINE

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The glories of continents seen
And all that my ears have heard,
Are lost in a garden's green
And the chirp of a nested bird.
—IVAN SWIFT.

THE CHRONICLE OF OBADIAH

By K. F. BASCOM

(ILLUSTRATED BY R. BRUCE HORSFALL)

OBADIAH'S parents were plain, dumpy, unassuming people with plenty of gray in their hair. His father farmed a little and did something in the contracting line—excavating, I believe—and his mother was said to be not too proud to help now and then as needed. In front of their home stretched one of those pleasant, sloping cow pastures along French Creek, with a row of trees looking down from the brow of the hill and at the bottom the water rippling over its flat shale bed on its way from one quiet pool to another. A rail fence wandered down to the water's edge, and a great oak and a gnarled cherry tree stood halfway down the slope as if they had started toward the creek and could not decide to go forward or back. There were a few broad stumps in this pasture—stumps of pines that had been saplings when a lean, lank Virginia boy, not unknown to chroniclers as the Father of His Country, paddled and poled a canoe up this creek, bearing messages to the French. The full-grown pines had long since crashed to earth amid the shouting of the axemen and had gone down the creek in the spring to the thriving village of Pittsburg.

RECONCILED TO THE MEDICINE DROPPER

"Standing up on his hind legs, grasping the dropper quite as an old toper might hold a bottle."

A quiet life the family led until one fine May morning. Such affairs had happened often enough in western Pennsylvania in the early days, but in those stark dramas the villains had worn little else than the red skins in which they were born. This morning one of the overalled gang hid behind a stump and sniped the old man as he started somewhat stiffly for his day's work, and a few minutes later the gang broke into the house and shot the old lady neatly between the eyes. At this point it should be added that it alters the story a good deal from the human standpoint, if not from all others, to make it known that this was merely a family of woodchucks.

There were four little fellows thus orphaned—little chucks with brown, beady eyes and wiry gray hair, shading to almost white beneath but tinged with reddish-brown back of the front legs. The dog got two. The others were saved for the time being and, since I was the professor of zoology in the local college, they came at last into my possession. Putting orphan woodchucks into the hands of a zoologist and a bachelor to boot was a scurvy trick on the part of the furry equivalents

of the Fates who may be presumed to preside over the destinies of the wild brethren. I had no knowledge, theoretical or practical, of pediatrics, but warm milk by way of a medicine dropper seemed logical. The starved, shivering, stiff little creatures swallowed feebly three or four times and would have no more of it.

A feminine bystander watched with some interest the amateurish attempt at feeding and christened the orphans forthwith. "This one is Obadiah and this one is Jonah." She gave no reasons for this choice except that the orphans looked as if those might be their names. As to marks of distinction, the livelier one was Obadiah. A bed of cotton and excelsior in a dry aquarium received the casually christened orphans.

Morning showed the choice of names to have been not wholly inappropriate. Jonah had not left his bed but lay there, brown eyes open and still bright, the stiff and pitiful effigy of a little woodchuck. Obadiah, goaded by curiosity or by pangs of hunger, had climbed from his bed and started adventuring, beginning the performance in good earnest with a sheer plunge from the table. He squeaked protestingly from behind a desk and seemed to swear when prodded into the open with a meter stick.

Refreshed and warmed through after his night's rest, and hungry as well, Obadiah drank copiously of warm milk from the medicine dropper, slept an hour, and then chattered indignantly for attention. He had fallen from the table into the wastebasket, had climbed to its rim, and was there balanced precariously in grave danger of disaster.

"THERE BALANCED PRECARIOUSLY"

"He had fallen from the table into a wastebasket and had climbed to its rim."

I regret to state that Obadiah required certain delicate attentions of a personal nature before being entirely fitted for human society. To put the matter plainly, he harbored upon his person a considerable society, most of them ticks ranging from the small shrunken ones miscellaneously distributed in company with sundry large and active fleas to swollen patriarchs between his toes, gorged with blood and clinging for dear life. After the largest ticks had been picked off and Obadiah had received a few dustings with insect powder, which he resented, he was thenceforth free from fauna.

Obadiah soon reconciled himself entirely to drinking from the medicine dropper and fed as nonchalantly and copiously as from Nature's font, even standing up on his hind legs and grasping the dropper quite as an old toper might hold a bottle. In such manipulations the four toes of his front foot acted as fingers, while the little black pad he wore instead of a thumb was used in place of that organ. He drank milk at each of his four meals a day until his little belly was as tight as a drum and the hairs which before so snugly covered it separated and let the stretched skin of his round paunch shine nakedly through.

Once he had regained his strength and had learned of the world outside of his glass bedroom, contentment left him, but much as I sympathized with his wanderlust, even the foster-parent of a woodchuck must labor, and so I laid a screen over the aquarium, weighted it and turned a deaf ear to his squeakings, chatterings and scratchings. At mealtime he showed a well-skinned nose. As his guardian had leisure to supervise such adventures, Obadiah toured the lawn before the building, tasting carefully everything he found. The first solid food which he seemed to relish was the yellow head of a dandelion. He ate no other plant food except the centers of dandelion heads until a couple of weeks later.

Obadiah's conceptions of the universe are for the most part unknown. It would seem that he must have recalled a burrow as a place of refuge, dug out in the ground. At least, some such hereditary idea might have been expected to come down to him from his burrowing ancestors. But no such dry definition hampered him. He was an opportunist and regarded a refuge as a burrow and to be appreciated as such, whether it ran up or down, whether it were empty and walled with earth or partly filled with a squirming human limb and walled with serge or tweed. In brief, he climbed trouser legs with great facility and apparent satisfaction to himself. He by no means despised coat sleeves, although they were less commodious, and one day while thus employed put forth his prematurely gray and serious countenance from my coat collar as I talked with a book salesman. This habit of his rendered him undoubtedly amusing, but I somewhat frowned upon it after I had been obliged to reach after him up the coat sleeve of a semi-hysterical young lady, this performance being staged before an appreciative little group of spectators. The young lady had held Obadiah in her hands and had been much amused when he started up her arm.

Obadiah had manifested some dissatisfaction with his sleeping accommodations, and since he showed such a predilection for anything resembling a burrow, it occurred to me to provide him with a sleeping bag. An old sock (once described by an optimistic supply sergeant as O. D., wool, heavy), when its toe was cut off, was undoubtedly in all essentials a burrow. When, after his supper, it was held open before Obadiah on the floor, he immediately recognized it as such and crawled in. It was then laid in his bed, and he, after sundry contortions which made the sock twist about like a sausage bewitched, managed at length to tuck his nose under his bulging belly and so it was slept.

Cutting teeth Obadiah cared for in his own way. When he came into my hands, he already had two tiny lower incisors breaking the gums. He employed human fingers in lieu of teething-rings, and the owners at first offered them willingly enough, even after the upper incisors began to show. However, Obadiah's front teeth, if human standards may be applied, soon grew too large for his face. He never seemed to realize the effect of those chisels upon the human skin and continued to employ as his favorite form of salutation and practical joke the seizing and nipping of convenient fingers.

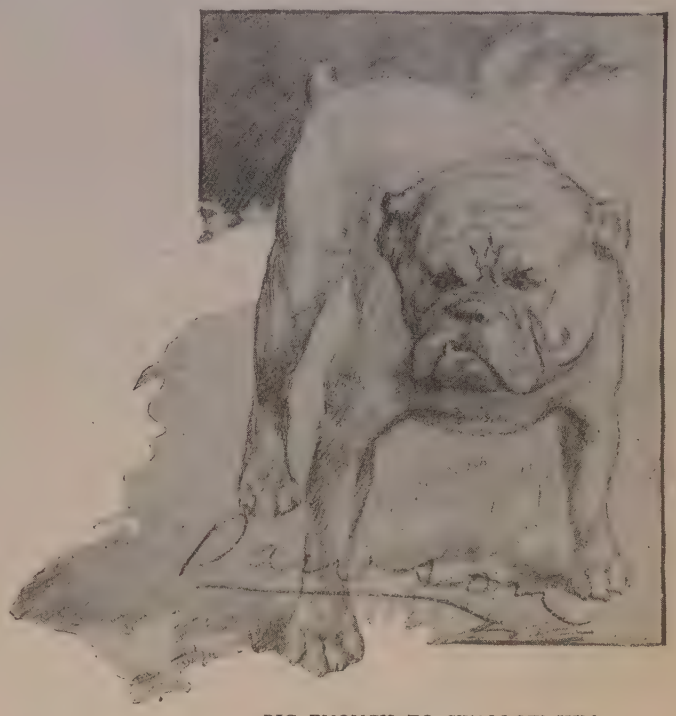
As the weather grew warmer and Obadiah became larger, he was put out on the grass in a bottomless wire cage where he might have been seen on a fine day lying "prone on his back," giving his aldermanic abdomen a sunbath. Soon tiring of the confinement, he trotted endlessly in a circle until the grass was smashed flat, stopping only to try to climb out of his cage, reaching up with his teeth while he clung with his claws. Hoping that the possession of a home of his own would give him contentment, I dug a shallow burrow of what I judged to be the proper caliber for him and encouraged him to employ his energies. He fell to work with a will. He bit mouthfuls of dirt from the side of the hole, thereby justifying those prominent front teeth. He put his head into the burrow, turned his stubby tail to the sky and scratched industriously with his front feet, sending the earth out in jets behind him, meanwhile turning himself in the burrow somewhat like an auger. Now and then he paused in these activities to kick out earth with his hind feet, all this as if it were an old story being done in the most

VALIANTLY SITTING ON HIS HAUNCHES

"He had abandoned his burrow and dug his way to freedom."

blasé and professional manner. Unfortunately his zeal proved transitory. He abandoned the burrow and dug his way to freedom beneath the edge of the cage, being recaptured in a yard across the street, while valiantly sitting up on his haunches and viewing in a most confident way the approach of a dog large enough to swallow him at a gulp.

He grew so strong and so impatient of confinement that one morning he was set free out of doors, whereupon he dug a burrow beneath a set of stone steps beside the building and late in the afternoon began to carry into it dead leaves and grass. On being presented with an armful of excelsior, he began at once to stow away in his new apartment. He filled his mouth with excelsior while he was down on all fours and then sat up, using his front paws very cleverly to tuck up loose ends, meanwhile keeping a bright



BIG ENOUGH TO SWALLOW HIM

Yet Obadiah sat viewing confidently the approach of the dog.

lookout for danger. This burrow having been furnished, Obadiah, who hitherto had been oblivious to photographers, now became as suspicious as a superstitious Indian and would dive into his hole at the click of a shutter. There was also a difference in his reaction to other strange noises, and as he foraged on the lawn an auto back-firing in the street would send him galloping for cover, although on one memorable occasion he withstood the noisy advance of a gasoline lawn mower until it was a few feet away. Even then his panic was short-lived and he soon looked forth again from his den like Diogenes from his tub.

As he grew older his food habits changed. He began to eat clover and lost somewhat his taste for milk, although crackers soaked in that fluid remained his favorite food. He would eat abundantly of such provender, always sitting up on his haunches and stuffing his mouth, showing the whites of his eyes and meanwhile chewing very rapidly like a through passenger in a railway lunchroom.

In a few weeks Obadiah discovered a hole in the foundation of a neighboring house and transferred his residence, mining out endless galleries beneath the building but never too busy to come when called, his muzzle covered with fresh earth, to eat home-made cookies, bar chocolate, nuts and like dainties. He regarded himself as a member of the family, and by pushing aside a loose board in the floor, came into the kitchen for his morning drink of water, following the housewife about and nipping her ankles until his pan was filled. He resented in like manner too much affection

OBADIAH ENCOUNTERS THE FELINE

"The cat, after losing several mouthfuls of fur, clawed Obadiah's snout earnestly."

lavished in his presence upon the family cat. The latter, a lanky stripling, had at first made playful overtures to the visitor and Obadiah had responded in kind, according to his own ideas of what constituted play, the same involving a liberal use of those natural chisels with which Nature had furnished him. The cat, after losing several mouthfuls of fur, clawed Obadiah's snout earnestly with the accompaniment of feline profanity, and thereafter each went his way.

Autumn came, and Obadiah was caught and transferred to the basement of the zoology building and incarcerated behind wire netting. A crack in the concrete floor served as the starting point for another burrow. The college circus being in prospect, an emissary was sent to secure Obadiah's attendance at that function. Obadiah put his head out of his burrow willingly enough and accepted and ate with appreciation piece after piece of bar chocolate but would not come entirely out of his burrow nor would he allow himself to be touched. Presently, no more chocolate being forthcoming, he retired to his sleeping chamber and was seen no more all winter.

When he once more awoke, it was spring. The snow in the old cow pasture where he was born had melted and run into French Creek. Sap was dripping from wooden spouts into sugar buckets and trailing arbutus blossoms made a quiet appearance in hidden spots. Among dead grass blades in pools of snow water the spring peepers shrilled. Spring is a season when even certain men have been known to use something less than their best judgment. Obadiah escaped from his home, now become an intolerable prison. Whether the motive was romance or just plain ennui, no one knows. How far he traveled and how he fared cannot appear in the record. He was gone a week and then came home to his adopted friends, three toes gone from a front foot and a great wound in his throat. He seemed glad to be back with us, but he lived only three days. And so Obadiah was buried under a cherry tree in a sunny garden.

An Intrepid Climber

By Henry Shriver, Jr.

KRAGS cracked and 45–70's boomed only a few yards away where the Pistoler's Club of Cumberland, Maryland, was celebrating Decoration Day. Oblivious to all this, however, was the majestic black snake with his four feet of length. Bill Ways and I measured him with a bit of string and he forthwith made his leisurely way to a maple tree, whose girth was a full five feet.

Slowly and with beautiful lack of effort, he climbed its perpendicular trunk, using the roughness of the bark to support his weight. To watch, this was an impressive feat, considering the bulk of the fellow and the size and erectness of the tree. He was last seen stretched out on a horizontal limb about ten feet above the ground, his beady eyes fixed on those below for all the world like the man-eating snakes of tropical dime novels, sleeping after apparently a full meal.

Dad Goes A Birding

By Lorene Squire

PHOTOGRAPHS BY THE AUTHOR—AND DAD

THE BLUEJAYS WERE PARTICULARLY PESTIFEROUS

Dad thought they should be easy to photograph because they were so bold, but he found out otherwise.

"I'M NOT going to play golf tomorrow," announced Dad from behind his newspaper. "How would it be for me to help you take some bird pictures?"

I uncurled myself from the hammock. "You mean that you think that it would be more entertaining to follow me around all day instead of a golf ball?"

"Oh, no—easier. Why all you do is wander around and now and then snap your camera. It takes real energy to play golf."

"Dad," I said, "I'll give you a real day of it. Set your alarm for four-thirty."

Dad laid down his newspaper in speechless horror, but I had already gone into the garden, fragrant and lovely there in the June twilight.

We reached Sandcreek just at dawn, prepared and ate our breakfast. Dad had never heard of anyone paying any attention to a Kansas sunrise, but if anyone wanted his opinion on the subject this was not bad at all, even if he did have to get up at an unearthly hour to see it.

I paused, in frying the bacon, to watch a catbird. Along a nearby willow branch he swaggered, paused, opened his beak as if to sing, then changed his mind and slid up a few feet, down a few feet, opened his beak, flew to another tree and then returned to the willow branch. He drooped his head and tail dejectedly. Then, struck by an inspiration, he swelled his throat and uttered—a cat-like mew. He considered the effect, uttered another mew, reconsidered, then changed his position and burst into a vivacious song—clear and beautiful as the mocker's. "At last," I said.

"Your bacon has burned," Dad observed.

After breakfast I

A FAT GRASSHOPPER FOR LUNCH

Mother mockingbird comes home with a tidbit for a group of hungry mouths, wide open and waiting.

discovered the catbird's nest in a nearby sapling. Just afterwards I saw a flash of golden yellow against the dark green of a scrubby pine.

"Could it be? Dad, I think I saw a yellow warbler."

"Well, what of it?"

"Come on." I grabbed his arm and pulled him through cocklebur bushes and high scratchy weeds to this pine tree.

At our approach the father yellow warbler scolded and made little darts at our faces, while the mother bird quivered her wings, fell through the branches and did her heroic best to pretend to be wounded. It worried Dad a great deal.

A YELLOW WARBLER WAS FOUND AT HOME

Its nest, built of grass and spider web, was of silvery sheen and lured the photographer.

It would be an easy matter, I thought, to find the nest, but it was not. Dad looked carefully, almost painfully, and I searched every branch of the little pine, but no nest. The parent birds became more and more excited, and the sun, as it has a habit of doing in Kansas, became hotter and hotter. Dad stopped to consider the idea of all this and then on the tip of a branch he saw the nest, so tiny and fragile that he could hardly convince himself that it was really a nest he was gazing at. It was built of grass and spider web, the latter giving it a silvery sheen, and in it were two very small birds with wide open mouths. Dad was enchanted. No; I could not go back to the catbirds. I must photograph the warblers then and there.

So I sent him to the car after my photography outfit while I tied back branches to expose the nest to the light. Dad came puffing up with the camera under one arm, tripod over his shoulder, and all the films that I had brought for the whole day's work. I finally set up the camera and attached a string to the shutter. Then we hid in some nearby bushes and waited for one of the warblers to come to the nest.

"You must sit still," I whispered. Dad stopped fanning himself with his hat. Then, when the mother warbler neared the nest, Dad slapped at a mosquito and the warbler flew away. I groaned. "I'm sorry," expostulated Dad, and the father bird darted from the tree. An hour of fruitless waiting went by. It seemed

THE BROWN THRASHER SCOLDED FROM HER NEST

Dad insisted on taking her photograph and nearly upset everything by pulling over the camera and tripod in his enthusiasm.

that Dad always chose a time to shift his position or say something or cough or gesture just when the warblers were almost to the nest. I admit it was a great strain upon my disposition.

Finally the father bird came to the nest with a small caterpillar in his beak. He made an exquisite picture there—a golden bird on a silver nest against a dark green background. I tightened my hand on the string and pulled it. The shutter made the usual thudding sound, the warbler darted away, and I had the thrill that always comes to me when I have captured one of these lovely, elusive records of the out-of-doors. Dad was hilarious. Then we returned to the catbirds.

You who have had any experience with catbirds realize how thoroughly heathenish they can be at times. These catbirds were heathenish. They calmly preened their feathers and mewed in their most cynical tones, but they refused to go near the nest. It was maddening. Dad and I sweltered in the sun and unanimously decided that we loathed catbirds.

This time Dad let mosquitoes and flies literally chew on him while he remained motionless and resigned. I am sure that I heard him murmur something about giving up a perfectly good golf game for this trip among torturing insects.

A VIREO AT HOME IN A LILAC BUSH

In martyred silence, Dad stood by while the little home-body was well photographed.

Finally the mother catbird drifted like a gray shadow near the nest, glided away, and then returned. Just above the nest she perched, and I snapped her picture.

Dad gave a gasp of relief. "There are times," he announced, "that sitting still takes more energy than trying to beat par."

"You take the tripod and film holders while I take the camera," I said. "We're going to hunt for some more nests."

Dad faintly agreed.

We followed the creek, now and then pausing to watch the killdeers that abounded on its shores or a hawk drifting overhead. The creek brought us to a country road, and there I found a locust tree with a bluejay's nest near its top. So of course I insisted on climbing to the nest, in spite of Dad's protests, carrying along my camera.

The bluejays shrieked a very unfavorable opinion of me from a nearby tree, and Dad yelled with equal enthusiasm for me kindly not to fall and break my neck. It was all very disconcerting. But at last I fastened my camera to a branch so that it was focused on the nest, attached a string to the shutter, and descended.

Dad suggested that bluejays should be easy to photograph as they were so bold. As time went on, however, he concluded that he was mistaken. The camera aroused the suspicion of the jays, and they were too interested in it even to think of their hungry youngsters in the nest. We waited and waited and waited, and disliked the bluejays even more than the catbirds. But finally the mother bluejay deigned to alight on the nest, and I snapped the picture.

Dad insisted on climbing the tree to take down the camera. He exclaimed over scratches from thorns all the way up. He did not on the way down. Neither did he make answer to my remarks. The reason, I found, was that he carried the six-pound camera with the handle in his teeth. Later he considered going on a liquid diet.

Then we walked on, following the country road, Dad mopping his face and declaring that he was hungry. But no, I told him, one does not eat when bird picture hunting—there are so many other things to hold one's attention. Dad assented morbidly.

The road brought us to a farmhouse, where we asked for a drink. I happened to see a young barn swallow, caught it, and photographed it on the hand of a little girl.

"That," said Dad, "is the way to take pictures. Capture your specimen and then photograph it instead of coaxing it to the camera—simple and easy."

"There's a nest of baby bluejays just ready to fly. I'll go get one and you can take its picture," said the girl. And straightway she brought me one of these squawking barbarians. I decided to photograph it on one of the hollyhocks growing there in the yard.

Did you ever try to make a young bluejay stay any place that he did not want to stay? If so, I am sure that you found a bluejay's preference is a thing to be respected. I carefully, even tenderly, put the bluejay on the hollyhock. He immediately left. "I'll catch him," shouted Dad. The bluejay eluded his clutch over and over again, shrieking defiantly. The little girl giggled; it was just like a comedy in a moving picture show. But at last Dad cornered the little fellow and brought him back. This time he held the yelling imp on the hollyhock until I was all ready to take the picture. The bluejay squawked and struggled. I told him to relax his

hold slightly and the bluejay would quiet down. Dad did this, and the bird fluttered away. Dad caught him and brought him back over and over again. We tried everything —forced, coaxed, almost pleaded with the bluejay to stay on the hollyhock. My arm ached from holding the camera. Dad repeatedly assured me that if he chased that bluejay one more time he would have a fit of sunstroke.

The little farm girl was the only one to show even a trace of a sense of humor. Finally she took the bluejay in her small brown hands, patted it and gently crooned to it, then put it on the hollyhock and it stayed there. I immediately snapped the picture. Dad collapsed against a tree and demanded why that bluejay would not do the same thing for him.

Then we started walking again and found a vireo's nest in a lilac bush at another farmhouse, a brown thrasher's and mocker's nest in some evergreen trees. I worked all afternoon on these birds, taking a number of photographs of each, while Dad stood by in perspiring, martyred silence.

"I'd like to pull the string to take one of the pictures. How about it?" he said.

I agreed. So when the brown thrasher came to the nest he gave a mighty tug, completely toppling the camera over on its tripod. I gasped in horror and ran to see if the camera was hurt. Fortunately it was not, but Dad's nerves had neared a state of collapse.

In late afternoon we started back to the car, cutting across fields on the way. As we walked a bird flew up from before my very feet, and on stooping down I found the nest of the lark sparrow. It was an exquisite thing, but Dad showed no enthusiasm. He got out the tripod with a groan, declaring that he was too tired to exist much longer. I made the picture and took one last look at the cup-shaped nest with its white eggs scrawled in black. Then we went on our way.

My small brother was on the porch when we drove up. "Did you have a good time, Dad?" he asked.

"My son, your father is a wreck," Dad solemnly assured him.

And mother is still wondering why Dad glared at her when she said, "I'm so glad you got into the country today, dear. Going around after bird pictures, as you said, is so much easier than playing golf, and I'm sure you needed the rest."

And although Dad never suggests going with me again, he holds the gentle art of bird photography in great respect.

A CANARY PRIMA DONNA

PHOTOGRAPH KADEL AND HERBERT

THAT canaries can follow the tune of an instrument as well as create their own songs has been proved by a Minnesota observer who writes after a morning spent in the sunshine with her bird:

"I have been playing the mouth organ here in the sun parlor, and Dickie, the canary, has been making a perfect monkey of himself. First I played an Indian song, and he danced up and down on his perch, jumped into the swing, and went through all sorts of antics, wiggling like a little whirligig.

"Then I played a slow, deep-toned hymn. He quieted down to sober attention. For a moment he sat still, balanced on the swing. Then he hopped to his perch and stuck his little head out between the wires at a wide place above his water jar. For a moment he sat there with his head slightly cocked on one side. Then he drew up to a very impressive height (I could imagine him folding prima-donnaish hands across a full bosom) and started a sweet trill, pitched several scales above my notes and in perfect harmony with my tune.

"I had known before that he would harmonize perfectly when he sang with other music going on in the house, but today he sang the sweetest accompaniment to my piece. Really, it was hardly an accompaniment. I think he produced the major melody and I played only a slow accompaniment for his lovely song. It was a beautiful thing."

In the Heart of the Pine-barrens

By Samuel Scoville, Jr.

The NATURALIST, the Botanist and myself were out adventuring that day near an old, old town in the heart of the pine-barrens. As we walked through the woods, from overhead fell like drops of molten silver, the liquid alto notes of a bluebird with the sky-color on his back and the earth-color over his brave heart. There are few bird-notes which I like to hear more than the "far-away, far-away," call of the bluebird.

Following a path made by forgotten feet a century ago, we came at last to old Cohansey Road which ran straight through the woods to a deserted harbor in the bay. Although the old road had been abandoned for over a hundred years, and was overgrown in places, its course could still be traced through the forest. Here and there along its length were fallen and crumbling bridges built in the days when the road was full of Conestoga wagons and ox-wains hauling merchandise to Philadelphia. That day the only traveler we met was a magnificent fox all silver-gray and tawny-red. He was crossing the road scarce twenty feet away just as we rounded a bend. As is the habit of the fox-folk, after the first quick glance he gave no sign of recognition of our presence. With inscrutable, downcast eyes and wrinkled face, he seemed to be pondering some important matter until he disappeared in a thicket on the other side of the road. Once out of sight he must have sprinted away at top speed, for when we reached the bushes a few seconds later there was no trace of him anywhere.

Farther on we came to an oak tree where some twenty feet from the ground an iron bar showed, half-buried in the wood. This sign-bar was all that was left of the old George Washington Inn. From it, in 1790, swung a portrait of the Father of Our Country, but the sign, the tavern, and even the clearing in which they stood have been gone for more than a hundred years.

A little later in the very heart of the forest we came to another noted tree, the famous Conference Oak where three hundred years ago the tribes of the Lenni-Lennape used to meet before they were nearly wiped out by the fierce confederacy of the Five Nations. Several inches deep in the living wood was cut the totem of the snake carved in four loops with the curves as clear and symmetrical as could be cut today by a wood-carver with modern tools. Long after the Lennape had gone, the settlers for many miles around used to hold their town meetings in a clearing under this tree. Today it stands in the midst of dense pitch-pine woods.

Beyond this assembly tree we came to an open space covered with tangles of scrub-oak, sheep laurel, and blueberry bushes. As the Naturalist stood there tolerantly watching the Botanist fill a tin box with specimens of the pine-barren flora, what looked like a small dark butterfly wavered uncertainly past him through the air. At the sight he seemed suddenly to lose his mind. Bounding like a mountain-goat he followed the flying insect, hat in hand. Back and forth he zigzagged while we cheered him from the side-lines. Finally just as his breath was nearly gone, a fortunate swoop of his hat secured the prize.

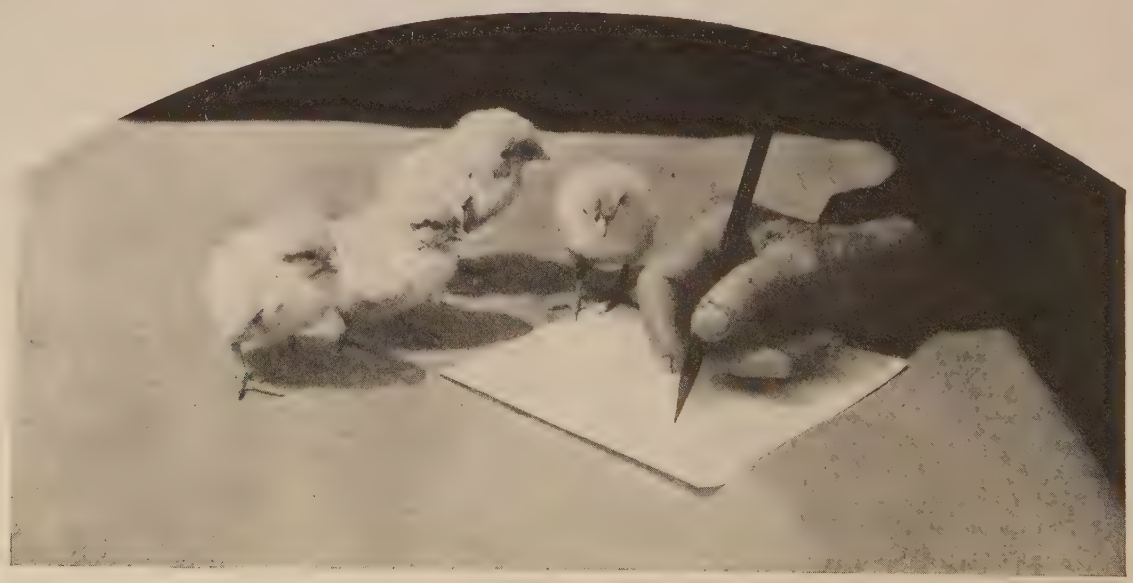
"Hemileuca maia," he puffed, holding up a smoky-black moth whose wings were eyed with yellow and whose tail and feet were tipped with red. Then relapsing into English, he explained that his captive was the rare buck-moth which breeds in the pine-barrens and only flies a few days in October. Only five had ever been reported up to that time from New Jersey. Personally I had never heard of the Hemileuca and was not particularly prepossessed with his appearance, for he seemed to be of a wavering, uncertain character—not at all the kind of an insect I would select for a friend. Yet the enthusiasm of the Naturalist soon had its wonted effect. Ten minutes later three more or less respectable, middle-aged citizens might have been seen running, leaping, and shouting across the landscape, waving their hats like lunatics, each following a will-o'-the-wisp in the shape of a buck-moth. Each wretched insect seemed always to be just on the point of being caught yet would often disappear even when it was apparently safely captured, leaving its pursuer bogged in patches of marsh or bound in bands of barbed catbriar. After an hour of this strenuous work, we were all exhausted, covered with mud, and our clothes ripped beyond repair but—we had a total bag of eight buck-moths. One of my two was carefully mailed the next day to a dear lady four-score years

"A SMOKY-BLACK MOTH WHOSE WINGS WERE EYED WITH YELLOW"

young, who collects butterflies in the White Mountains during the summer and in Florida throughout the winter, and has, perhaps, the largest private collection of the Lepidoptera in this country. A week later she wrote that the Hemileuca had hitherto been lacking in her collection and that she would rather have one than a million dollars. I hoped that the Academy of Natural Sciences in Philadelphia, to whom I sent my remaining specimen, would feel the same way, but so far they have kept both the moth and their million.

At last it was time for lunch and we sat down on a dry bank near where an icy trickle of clear water had cut its way through the wood-mold to the pure white sand below. As we ate, a blue-headed vireo passed by in the tree-tops and sang "See-ee, me-ee, *You, you,*" and a yellow palm-warbler with maroon head, golden breast and twitching tail flitted through the brush. As we started on after lunch, the Naturalist and myself suddenly seized the Botanist and began to push him toward a pale-gray bush covered with dangling bunches of greenish-white berries, whereupon that noted scientist kicked and struggled mightily until we released him—for one of the few things which the Botanist fears in this world is poison-sumac. Not less than thirty times has he related to us at great length the story of that long-ago day of his innocent childhood when he made a hockey stick out of one of those venomous shrubs and what happened to him all the rest of that winter every time there was skating. Later in the afternoon we had sat down on a log to rest when suddenly the Botanist arose abruptly. Back of him was a clump of arrow-wood and through its scalloped leaves were thrust the blistering fingers of a hidden sumac.

"If there's a *Rhus vernix* within ten miles I'm always the one who has to find it," he complained bitterly as he crept cautiously out of his bower and for the next half hour described to us all the symptoms and sufferings of his last attack of sumac-poisoning. Since that day he claims to have found cures which I hasten to chronicle for the benefit of the 25 per cent of humanity who are not naturally immune to ivy- and sumac-poisoning. They are as follows: A saturated solution of hot water and salt for light cases, an application of oil of goldenrod for those more severe.



THE CHICKS TAKE A PENMANSHIP LESSON PHOTOGRAPH CORNELIA CLARKE

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ONE OF THE GREAT EXPLOSIONS AT KILAUEA IN MAY, 1924

This outbreak caused the only fatal accident in the modern history of the Hawaiian volcanoes.

NATURE'S FIERY FOUR HUNDRED

By Charles Fitzhugh Talman

Of the United States Weather Bureau

THE ACTIVE volcanoes of the earth are just about as numerous as the *élite* of New York City were pronounced to be by the late Mr. Ward McAllister. There are only 430 of them according to the latest estimate.

A statement of this kind is not of much value unless it is accompanied by a definition of the word "active." Throughout the world there are many thousands of places where volcanic eruptions have occurred at some time or other in the past. Several of the largest mountains in the United States, for example, are known, from an examination of their rocks, to be of volcanic origin, and in the northwestern part of this country there is an area of nearly 200,000 square miles of solid lava, due to prehistoric volcanic outbreaks. In drawing the line between active and extinct volcanoes it is the custom of most authorities to assign to the former class (1) all volcanoes that now show even slight signs of life, such as the occasional emission of steam and fumes, with or without more violent outbreaks, and (2) all that are known to have been in eruption within historic times. As applied to unsettled or newly settled regions, the second of these criteria is, for obvious reasons, rather unsatisfactory.

Though the figure above quoted is only approximate, the interesting fact remains that volcanic activity, even in a very broad sense of the term, is limited to comparatively few spots on the globe. As for the volcanoes that perform spectacular feats at fairly frequent intervals, they can almost be counted on your fingers; while the number of those that keep up a continuous exhibition is still smaller. Stromboli, in the Mediterranean, is constantly in mild eruption, so that its light by night serves as a beacon for mariners. The huge crater of Kilauea, in the Hawaiian Islands, contains a depression, known as a "fire pit," in which glowing lava can nearly always be seen, and at times it affords a magnificent spectacle. A few other cases of such constant activity are known. On the other hand, great explosive outbreaks corresponding to the popular conception of a volcanic eruption do not happen, on an average, more than once in three or four years in the entire world. As they seldom last more than a few days apiece, the sight of one of them is a rare experience indeed from the standpoint of the individual human being.

Collectively, however, the human race has suffered severely from volcanoes. Since the beginning of the sixteenth century, 98 eruptions of 57 volcanoes have destroyed about 190,000 people. Of these 176,500 died on the Pacific half of the globe. The heaviest loss of life occurred in the eruption of Tomboro, in the Sunda Islands, in 1815, when more than 56,000 people perished. The outbreak of Krakatoa, in the Straits of Sunda, in 1883, was indirectly responsible for the deaths of more than 36,000 people, who were drowned in the great waves piled up on neighboring shores by the eruption. Mont Pelé, in Martinique, and Soufrière, in St.

Vincent, both in eruption in 1902, ejected fiery blasts and showers of rock that destroyed about 30,000 lives. Ten thousand deaths each are credited to the eruptions of Laki (Skaptar Jökull), in Iceland, in 1783, Kelut, in Java, in 1586, and Unsen, in Japan, in 1792. Of course the property losses have also been enormous in many of these outbreaks.

LAVA TORRENT IN THE "FIRE PIT," KILAUEA

A sudden local sinking or rising will cause the lava to flow in rushing torrents and cascades from one place to another.

Fortunately for mankind, volcanic activity is confined to certain fairly well-defined zones of the earth. Generally these zones do not extend far away from the ocean. The most remarkable is the one that nearly encircles the basin of the Pacific, while another includes the island summits of the submarine ridge that extends north and south through the middle of the Atlantic. The zone of most intense activity includes a chain of East Indian islands stretching westward from the volcanic girdle of the Pacific. The Lesser Antilles, in the West Indies, the eastern half of the Mediterranean basin, and a segment of eastern Africa and the western Indian Ocean about complete the list, though there are some scattered volcanic districts in western and central Asia. In all these regions the possibility of volcanic outbreaks is a standing menace to humanity. Craters apparently dead for centuries are likely to burst forth in stupendous eruption, and from time to time an outbreak, occurring where no crater previously existed, rapidly builds up a new volcano.

Until a few years before the famous eruption of A. D. 79, which buried the towns of Pompeii, Herculaneum and Stabiae, Vesuvius had shown no signs of life from the earliest settlement of Italy. It was in the crater of this apparently extinct volcano that Spartacus and his band of runaway slaves took refuge and defied the legions of Rome in the year 73 B. C. The awakening was preceded, however, by a series of earthquakes, beginning A. D. 63. After the first great outbreak there were eruptions at long intervals for many centuries, but in modern times they have been very frequent. Bandaisan, in Japan, had been dormant for a

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THE ONLY VOLCANO RECENTLY ACTIVE IN THE UNITED STATES

Crater of Lassen Peak, California, August, 1914. This volcano has now been dormant for several years.

thousand years before its outbreak in 1888, which was one of the most gigantic in history. Krakatoa had remained tranquil since 1680 before it suddenly blew up in 1883. In fact, the most violent eruptions generally occur after long periods of repose.

There are many known cases in which new volcanoes have suddenly appeared. The beautiful cone of Fuji-San, the "sacred mountain" of Japan, is said to have arisen in a single night in the year 285 B. C. Its latest eruption occurred more than two centuries ago. The sudden rise of Jorullo from the plains of Mexico in 1769, made famous by the description of Humboldt, was a less remarkable case than that of Mt. Izalco, in Salvador, which made its appearance in 1770 and has been growing ever since! Its height above the plain, which was 2,000 feet in 1850, is now more than 4,000 feet, and its frequent outbreaks are said to be uplifting it at the rate of 60 feet a year.

Submarine eruptions are not uncommon, and they occasionally give rise to new islands. Sabrina and Graham's Island, in the Azores, appeared in 1811 and 1831, respectively. Both were afterward destroyed by the action of waves. The island of Bogoslov, in the Aleutian archipelago, was formed by a volcanic upheaval in 1796, and is one of six volcanic isles that have appeared in Bering Sea since the days of the earliest navigators. The latest, named Perry Island, arose in 1906. Many small temporary isles have been raised by volcanic action in the neighborhood of Santorin, in the Aegean Sea.

Probably nine people out of ten suppose that the principal feature of a volcanic eruption is a great belching of flame and smoke from the interior of the earth. This idea is quite erroneous. There is little if any real flame connected with an eruption, and the cloud seen over the crater does not consist of smoke, but of steam, heavily laden with dust. The appearance of fire is due to glowing rock, either molten or solid. The molten material is called "lava." The finer solid material is commonly called "ash," though it is entirely different from the ashes due to the burning of coal and other combustible substances. Larger pieces of ejected rock are known as "cinders," "lapilli," "bombs," etc. The cloud above a big eruption towers to an enormous height; probably twenty miles or more in some cases. Moisture condensed from the atmosphere adds to its volume, and the uprushing current of hot air generates the most terrific thunderstorms that occur in Nature, with almost incessant lightning. From the cloud fall torrents of rain, which, mingling with the dust in the air and on the slopes of the volcano, forms a sort of mud-lava. It was such mud, and not true lava, that buried the ancient cities at the foot of Vesuvius. In its hardened form it is called "tuff."

When a stream of real lava pours from a volcano its surface cools and solidifies very rapidly. The crust thus formed is a poor conductor of heat, so that the lava beneath it remains hot for a long time. It is said that lava streams from Mt. Etna have sometimes continued to emit heat and steam from their crevices for twenty-five or thirty years after an eruption. It may also happen that the molten lava under the crust flows away, leaving a tunnel or "lava tube." Many such tubes are found in the Hawaiian craters. The rapid formation of a lower crust explains the fact that lava

PHOTOGRAPH FROM GEOPHYSICAL LABORATORY, CARNEGIE INST.

LIKE A GUSTAVE DORÉ DRAWING OF THE INFERNO

Part of the crater floor at Kilauea, covered with lava that resembles molasses candy in shape, though not in color.

may flow over a field of snow without completely melting it. On one of the South Shetland Islands, in the Antarctic, there are cliffs consisting of alternate layers of ice and lava.

The violence of volcanic eruptions varies through all grades, from quiet outflows of lava to tremendous explosions that are the most appalling of all terrestrial events. The great craters of Kilauea and Mauna Loa, in Hawaii, are examples of the quiet type of volcano. They are so "tame," and at the same time so continuously interesting, that they are a Mecca for tourists, and, with their surroundings, have been set aside as a national park. Of the tens of thousands of visitors attracted each year to the Hawaiian volcanoes, only one has ever met with a fatal accident. That was in May, 1924, when Kilauea indulged in a most exceptional explosive outbreak. Both of these craters sometimes pour out large quantities of lava. One stream from Mauna Loa was fifty miles long and in some places three miles wide.

PHOTOGRAPH FROM U. S. ARMY AIR SERVICE

THE LAVA STREAM FROM MAUNA LOA, APRIL, 1926

The lava is seen approaching the fishing village of Hoopuloa, which it engulfed to a depth of fifty feet.

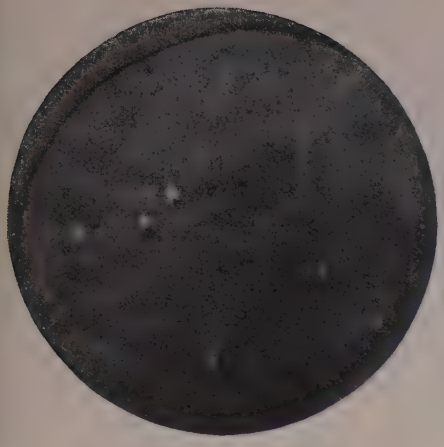
One of the most remarkable explosive eruptions of modern times was that of Mt. Katmai, Alaska, in June, 1912. The mass of ash and pumice thrown into the air is said to have amounted to five cubic miles, and in its fall it buried an area as large as the State of Connecticut to a depth of from ten inches to ten feet. This record is eclipsed by that of the Tomboro eruption of 1815, when 29 cubic miles of solid material is supposed to have been spouted from the volcano. The noise of the Krakatoa eruption of 1883 was heard 3,000 miles away, and was so heavy as to break windows at Batavia, nearly 100 miles distant. In the eruption of Mont Pelé, in 1902, the explosion blew away the side of the mountain and sent down the slope a great cloud of hot gases and glowing dust, which annihilated the city of St. Pierre, killing instantly all but two of its inhabitants.

As to the cause of volcanic eruptions, you may take your choice of a dozen proposed explanations. Probably several agencies are involved in the process. The formation of steam appears to have a great deal to do with eruptions of the explosive type. The heat involved in volcanic outbreaks was once thought to be merely the normal heat of the earth's interior, just as molten lava was supposed to be a sample of what the whole globe consisted of beneath a few miles of crust, but scientific ideas about the structure of our planet have changed radically since the days of our grandfathers. The belief that local chemical action plays a large part in generating the heat manifested in an eruption was advanced by some geologists more than eighty years ago, and has been greatly elaborated by those of today. The discovery of radioactivity supplied a new means of explaining this heat.

Nowadays the study of volcanoes constitutes a distinct branch of science, known as "volcanology," which, though it has not fully explained the cause of eruptions, has thrown a great deal of light upon the various circumstances that attend these outbreaks. The most important center of volcanic research in the world is the Hawaiian Volcano Observatory, on the edge of the crater of Kilauea, founded in 1912, and now under the control of the United States Geological Survey. At this unique institution many measurements have been made of the temperature of the lava, samples of the hot gases have been collected and analyzed, the changes constantly going on in the crater have been recorded by means of thousands of maps and photographs, and through these and other methods there has been acquired, for the first time, an intimate knowledge of a volcano's daily habits.

One of the interesting discoveries made here is that the rise and fall of the lava is connected with tides in the earth's crust, similar to those of the ocean. Another and even more important one is that periods of great activity in the crater can be predicted with much accuracy from the records of the seismographs, or earthquake-recorders, at the observatory.

As this issue of NATURE MAGAZINE *goes to press, the Association's expedition to the treeless islands of Bering Sea is still in the northland. Fragmentary word from Mr. William L. Finley tells us, however, that the results in photographs and material for stories are to be all that was hoped for. The story of the expedition's thrilling experiences will be told, beginning with the December issue.*



EXPOSED FOUR MINUTES

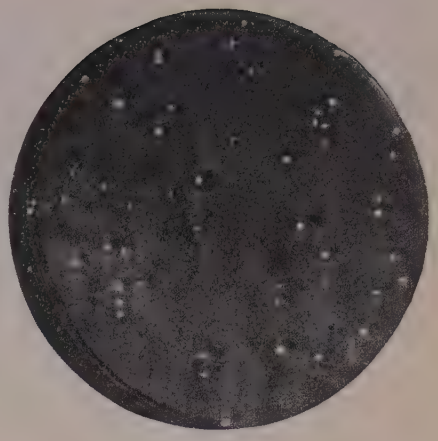
Small colonies of bacteria started in two days.

Once again Mr. Howes writes a most helpful article for the Nature lover, this time on the fascinations of a bacteria garden. His story is full of suggestions about a new field of acquaintanceship.

MICRO GARDENS

By Paul Griswold Howes

(PHOTOGRAPHS BY THE AUTHOR)



FOR FOUR MINUTES ALSO

But the hall was swept and the resulting colonies started.

A MICRO garden is a very entertaining thing to possess, and one that any person may have, in return for a little time and trouble. It costs practically nothing, and the seed from which its flora grow are everywhere for the asking.

We require, to begin with, a few petri dishes, which are thoroughly sterilized by steam for a few hours. This is easily accomplished by placing the clean dishes and their covers upon some support within a large covered cooking pot and allowing the steam to circulate.

While these glass dishes are in the sterilizer, we may proceed to the second step in making our garden, namely, the preparation of the culture medium. This material, known as Nutrient bacto-gelatine, is put up in bottles by all the good dealers in laboratory supplies and may be prepared for use by simply adding sterilized water, to dissolve the material. Upon the label of every bottle the amount of water necessary for preparing the medium is given and this saves the tedious hours of labor formerly necessary to obtain the fresh medium from meat infusions.

When the sterilized dishes have cooled, a thin layer of melted medium is poured into each one, the covers replaced and the dishes set aside until the medium hardens. They are then ready for "planting" with the "seeds" of the most minute plants of our garden.

What we shall cultivate upon these plates of jelly, are colonies of bacteria and moulds. The gardens will be exciting from the outset because by the methods that we shall employ, we cannot be sure just what strange little forms will spring up! You must know that the vast majority of bacteria and moulds are harmless little plants that swarm in the air everywhere about us. We must not think of them as harmful just because some of them are the causes of disease. There is as much beauty in these tiny plants as in any others.

You will be delighted with moulds. Their beauty is often astonishing, but with our whole micro garden we must remember that a magnifying glass or microscope will be necessary before we can fully appreciate its floral offerings.

First of all let us try an experiment to illustrate how numerous the moulds and bacteria are about our houses. Let us take one of the petri dishes with its sterilized film of culture medium. We will place it upon the hall table and remove the cover for four minutes. With a second dish of medium we will proceed as before, except that while the dish is being exposed we will sweep the hall with a broom or carpet sweeper. In two or three days our two dishes will show surprising results. The first one will perhaps be dotted with two or more yellow colonies of bacteria, consisting of thousands of offspring from the two or three air-borne bacteria that were floating about when the dish was exposed. Our second dish will contain a thickly studded field of micro weeds stirred up by our sweeping operations and now firmly established in the medium. There will be white patches, yellow patches,

A MICRO GARDEN AT ITS BEST

There are tiny cups of various colors, stalks, knobs and colored fruits and masses of things never named. The pin tells the size.

and orange ones, easily identified as bacterial colonies by their smooth appearance and total absence of thread-like projections.

There will be moulds also, maybe in both dishes, but surely in the second one. These are readily recognized even in early growth, by the minute white or silvery hairs radiating in every direction from a central colored mass. As they grow, and the tiny uplifted spikes of growth turn to fruit, color will appear. Greens and blues, salmon pink, black and white, all of which will reveal their exquisite beauty beneath the lens.

With other dishes of medium, exposures may be made almost anywhere. A crowded theater will yield a great crop of strange growths. An old cellar or even the open air may be worth trying.

It is not absolutely necessary to use the prepared culture medium in growing some of the most beautiful of the moulds. A piece of bread or a stale biscuit, moistened and kept under a bell jar or finger bowl upon a sheet of blotting paper, will produce remarkable results.

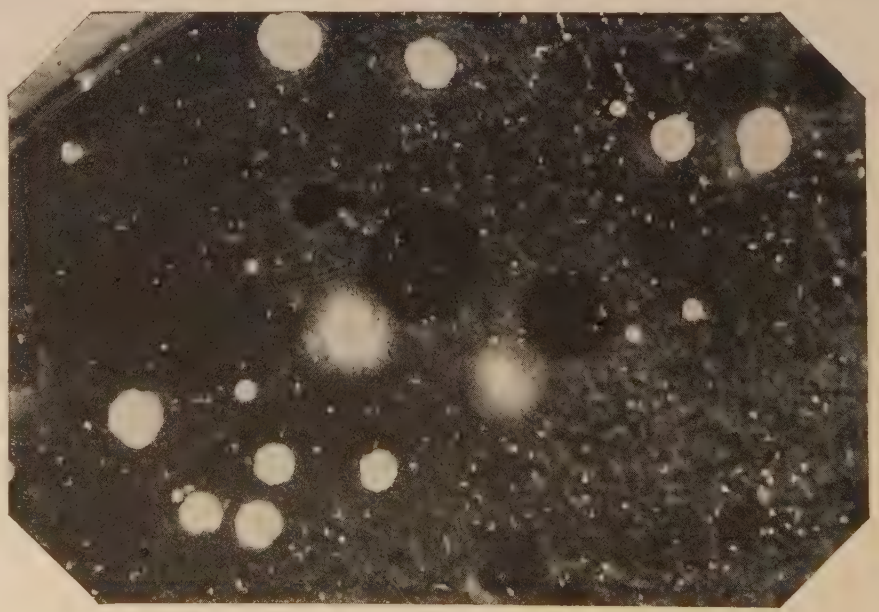
A lovely salmon pink species known as *Monilia sitophila* often appears almost at once upon moist bread, its tiny spores being caught during their flight through the atmosphere. *Monilia* grows with great rapidity, completely overrunning any other species that may be present, with its delicate silvery meshes. In a few hours the plant commences to fruit, deluging everything with beautiful salmon colored dust that tumbles in little piles about the host. This pink powder consists of myriad spores of practically no weight. Small wonder that it is so easy to catch them from the air! Another very common mould is the black *Mucor* of bread. Its fruits are like thousands of tiny black-headed pins. One can hardly avoid growing this one upon a moist bread medium.

LIKE THE TREES OF A GREAT JUNGLE

A photomicrograph of the drooping fruit masses of *Monilia sitophila*, like salmon-pink blossoms

THE MOULD OF BREAD

A fruiting mass of *Mucor*, the black mould of bread about four times life size.



THREE MINUTES IN A CROWDED THEATER

This is the garden crop. The white disks are bacterial colonies and the two central masses are moulds.

The green moulds are most frequently *Penicillium*, with the brown ones that grow in the prepared bacto-medium are often but not always, *Cladosporium*. Pure cultures of a single species may be made by impregnating a sterilized petri dish by means of a needle that has been sterilized in the flame of an alcohol burner. The needle is rubbed in the colored part of the desired mould and then touched to the medium in the dish, which is covered again at once. In a few hours the species of mould desired will be growing uncontaminated by other varieties in the dish.

Most of the growths may be enjoyed by a simple magnifier, but bacteria cannot be seen separately without a high power microscope. The plain colored masses upon our dishes of medium are composed of great numbers of individual bacteria. Under the microscope these may appear as little rods, circles or spirals. Bacteria are not "animals" but plants, and these three forms are about all that one finds, although there are a great many species.

There are two other

higher forms of plants that enter into our micro gardens. These are minute fungi and equally minute regular, leaved plants. To grow these, the petri dishes are not sterilized or filled with the gelatine medium. Instead they are filled with a layer of rich rotting wood, and the black soil that one finds about the dead stumps of trees in old woodlands. Just a thin layer of this is required. It is kept very moist, and covered, except when under observation.

One must hunt for the tiny plants that are to start these gardens, in the same places that the mediums are secured. A careful hunt will reveal numerous exquisite little organisms that may be transplanted just as they are, to the gardens and allowed to reproduce naturally. Some will die, of course, but a little patience will reward one with a minute garden that will be a revelation. Tiny cups of various colors, little stalks and knobs and colored fruits. Little green leaves and masses of mere pin points of pigmented things that probably botanists have never named. It requires sharp eyes to obtain the original stock, but once found one forgets the time that was spent in the search, in the enjoyment that follows. I shall say no more, except to urge you to try to cultivate one of these micro gardens!

Told in the Garden

By Ben Hur Lampman

WHEN THE first sultry days of summer bring thirst to the garden, and the young asters droop, then it is that suburban folks are aware of the plight of the birds. There is neither dew nor rain, and a bird must wet its whistle if there is to be song in the pie-cherry tree. The bold ones! They contend for the waterhole of the goldfish pond, and ranged along its concrete brink they drink and lift their heads in gratitude to Providence—and like bright ducats tossed in air the goldfinches take wing before the robins, whose estate this is, and who deal rigorously with trespassers. Or a chipping sparrow flutters timorously down to sip. And a fat bee is droning in the pea vines. The garden is drowsy with noon.

"RASH POET OF THE PIE-CHERRY"

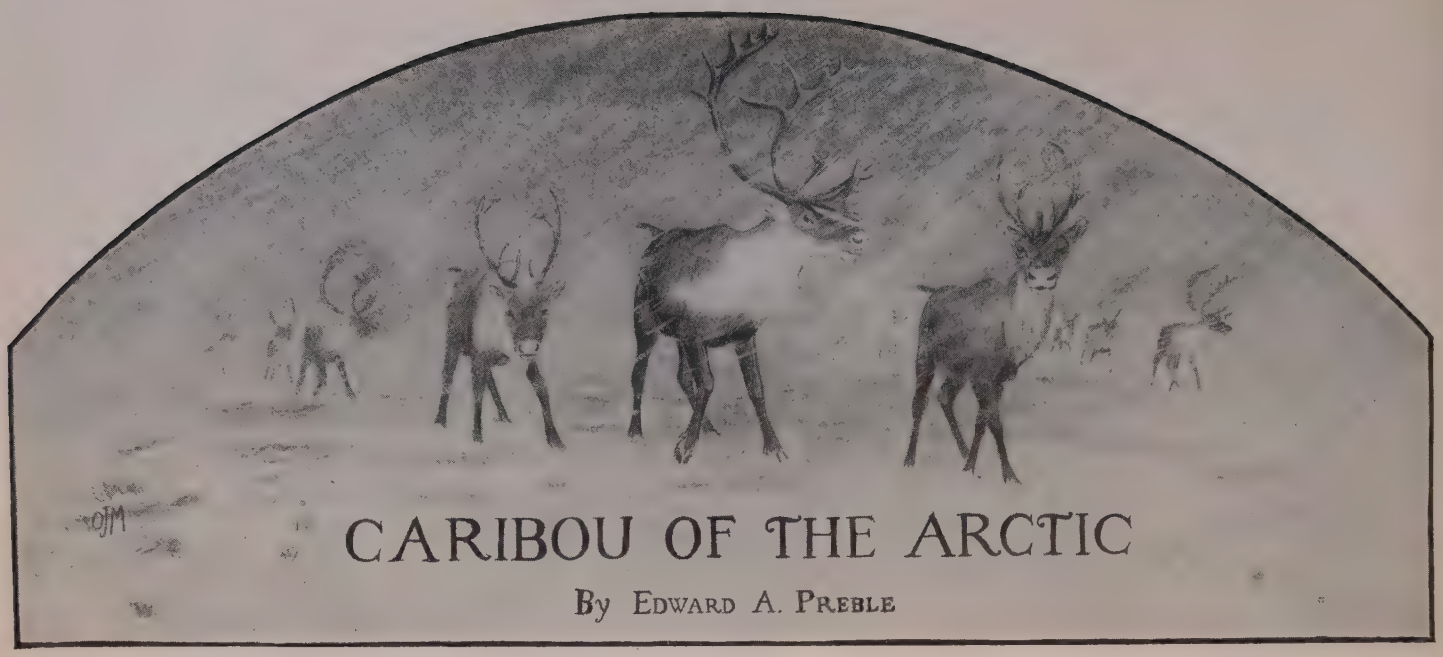
"Time and again the white-crowned sparrow plunges fearlessly into the central pond and rises to the ledge."

At such an hour there comes to the pond of the goldfish a feathered poet who is not content with any mere libation. He is the bard of the pie-cherry tree, the white-crowned sparrow, and he would bathe. This is treacherous water, friends; even the masterful cock robin dares not plunge therein. They who are neither waders nor swimmers must beware, for the cool depth of it is not a bit less than thigh-deep to a heron, and grateful as it is to the tongue it holds a lurking dread. Mark how the concrete drops sheer away into the shadow where the goldfish mumble at the sand. It is enough to affright the boldest heart. Ho, there is no fear in the heart of a cock sparrow of the white-crowned clan! This is the way it is done!

By all our avian forefathers, he has plunged into the pond, the lake, the gulf, the ocean of the goldfish! O foolish and impetuous bird! Twitter the dirge through all the garden, from the pea vines to the grape. Rash poet of the pie-cherry! You were not meant to swim. Yet as instantly as the pond received him it has given him up. He rises in a tiny welter of sprays, scuds with tingling wings to the brink, and perches there, tossing a shower around him. Male and female, the amazed English sparrow draws near. This is preposterous. But no; the blighter does it again. My word! And time and again the white-crowned sparrow plunges fearlessly, happily into the central pond and rises to the ledge. His manifest enjoyment is an affront to the English sparrows, and with coarse language they are upon him, beaks parted, wings nervously winnowing. He is up and away, draggled of feather and light of heart, and the goldfish pond is theirs. They are saying that he needed the lesson.

He stood thus, the white-crowned cousin did; and he flew down in this manner. But never do the wings of the envious imitators so much as brush the surface, for it is a dread pond and very deep. They have regained the concrete ledge, to hop around it, peering down where the goldfish are lazily flashing. There is no courage in their hearts. They are not poets, as the white-crowned sparrows are, and the heights of inspired valor are not for such as they. Another day, perhaps. Not now. Not now.

Bustling into the garden comes the robin, whose manor it is, and little need he has to bid them begone. They have fled the place, and the robin dips and drinks with much deliberation, reflectively, gravely as a burgomaster seated in his favorite inn. Decidedly the place has its advantages. The strawberries are setting on. Worms frequent this shady lawn. Very fair water, too. He dips to drink again. And hidden in the pie-cherry tree the white-crowned sparrow is singing a song to the world.



CARIBOU OF THE ARCTIC

By Edward A. Preble

CARIBOU, or reindeer, as they are called when driven by Santa Claus, came to America, like that famous traveler, from the Old World. Paleontology tells us that many species of mammals were developed, lived out their earthly span, and disappeared as living types before the caribou appeared in North America. This was during the period when the great ice-sheets from the north chilled our climate and banished the warmth-loving grass-eaters then existing to make room for its own cold-climate types. About that time the caribou lived in our swamps and glades as far south as New Jersey, Pennsylvania, Kentucky, Iowa and Utah. Some of these died under such conditions that their bones were preserved, and the few skeletons that have been found by modern naturalists show that they were not unlike those inhabiting America today, or those whose pictures the men of the Stone Age scratched on the reindeer's horns, and left with their own bones in the caves of southern Europe.

Two types of caribou now exist in North America. The northern type, not very different from the reindeer of the Old World, lives from northern Greenland and the Arctic Islands—that is, on the most northern land of the world—south to central Canada in the lowlands, and to the northern border of our northwestern states in the higher mountains. Many races have been described, but in life they are surprisingly alike in appearance and habits. They include several local forms mainly lighter in color and smaller in size, and less migratory in habits, than the typical barren ground form of the Arctic mainland, our present subject. The woodland caribou, a larger, relatively small-horned animal, lives in small bands in the forests of eastern Canada. Perhaps it is a remnant of that race which formerly existed farther south, the surviving members of which chose to remain in these comparatively temperate surroundings, when the ice last retreated. At any rate it has proved less able than the deer and moose to resist man's relentless pursuit, has practically disappeared from northern New England and New York, and is barely surviving in southern Canada. On the great island of Newfoundland live a few wandering herds of a fine race, evidently also of the woodland type.

With the return of the American Nature Association Expedition to the north under William L. Finley, readers may look forward to some incomparable material. In this article by Mr. Preble, illustrated by Olaus J. Murie, both of the United States Biological Survey, and both of whom know the caribou in its native haunts, we have a fitting introduction to the Arctic.

MOTHER AND CALF IN MIDSUMMER

At this season of the year the barren grounds are covered with flowers and the loons are calling.

Caribou are a restless, wandering tribe. Always they seem to be going somewhere, searching for something. Perhaps they are looking for peace, for some haven where they will be safe from persecution. Since those early times when primitive man cracked the marrow bones of caribou in his cave home, and scratched with a flint those sketchy outlines which show that the animal has not changed appreciably its form, man has pursued and killed the animal, or brought it to subjection. Perhaps it is this

very restlessness that has kept the caribou from changing through the ages, for it has refused to remain long enough in any place to be much modified by its surroundings. Would that we could foresee for this fine species that peace which it has been seeking, but which even the noblest of earth's creatures fail to attain save in slavery or death.

The reindeer has long been domesticated in Scandinavia and other parts of northern Europe, as well as in northeastern Asia. In Europe, indeed, it is now scarcely known as a wild animal, and even in Spitzbergen has become very scarce. Its importance to the Laplanders and to the natives of Siberia has long been common knowledge. Many of these tribes live mainly upon it; their wealth is determined by the size of the herds, and their own life through the years is influenced by its requirements. It is used both as a beast of burden and of draught. Its flesh and milk form the principal food of its owners, and its skin their clothing. About thirty years ago the United States Bureau of Education, with their great economic value in mind, introduced domesticated reindeer into Alaska to aid the Eskimos in their struggle for existence in the face of their disappearing game. The animals imported were the pick of many herds selected from different sections of northeastern Asia. The project has proved successful, thousands now being owned by natives. In some cases white residents have built up herds and some of the meat is exported to the States. Experiments in crossing the domesticated animals with the larger native caribou in order to improve the size of the stock are under way.

AN OLD BUCK IN HIS PRIME

By late September the horns are free of velvet and the long white hair on the throat is fully grown.

It is not our present purpose, however, to discuss the domesticated reindeer, but rather its wild relative, the barren ground caribou, named *Rangifer arcticus* by Sir John Richardson, one of the first naturalists to become familiar with it in its principal homeland, the great treeless plains of northern Canada. There it still lives by thousands in spite of the persecutions that it has suffered, and there we hope it will continue to live for many years.

The barren ground caribou, in primitive times, was to the semi-nomadic tribes of northern Canada and Alaska what the bison of the plains was to its Indian neighbors. It was no accident, but a fine tribute of appreciation, that led the Crees to call the white-fish, one of the finest and most dependable food fishes in the world, the "caribou of the waters." The flesh of the caribou formed the principal food of several of the native tribes of the sub-Arctic northland, and its skin their clothing and tents. The sinew from the back, finely divided and twisted, made a strong and durable thread, and thongs of rawhide skilfully cut in varying widths satisfied their demand for cordage, harness, and a hundred other needs. From the horns were made fish spears and hooks, ice chisels, and knife handles, and from the split shank bones scraping knives to assist in dressing the skins. What wonder that these tribes believed that the caribou was created by the Great Spirit for their special benefit, and that a sufficient stock would always be furnished no matter how many were killed.

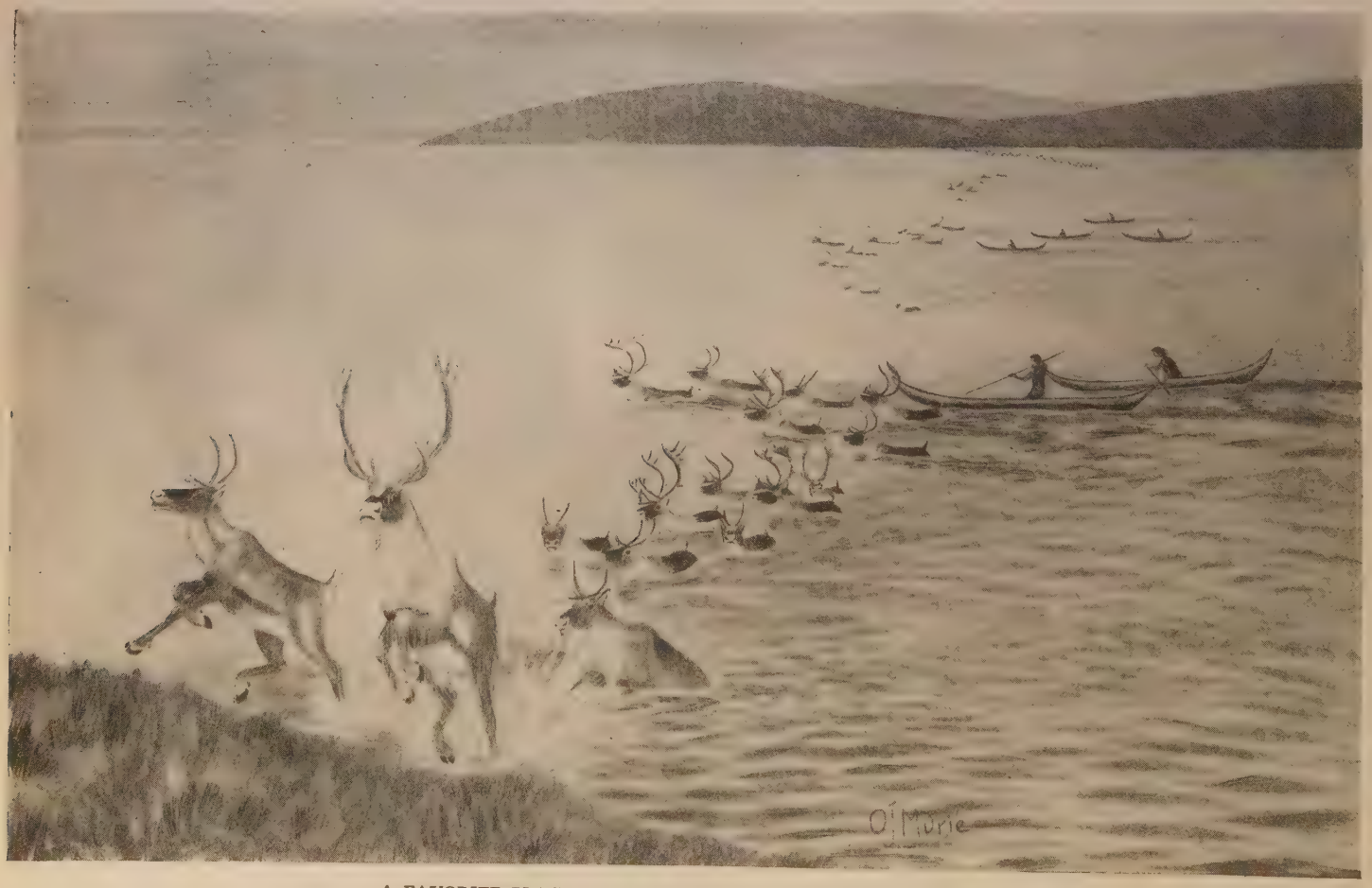
No animal in the world is better adapted to its environment than the caribou of the Arctic barrens. The peculiar structure of the hoofs, which are furnished with sharp edges, give it a wonderful sureness of foot on rough frozen ground. Its speed and endurance make distance a matter of scarcely more concern than if it bore wings, and the wolf, its only natural enemy, is speedily left behind in fair flight, and seldom scores a victory over any save the age-enfeebled or the crippled. Alone among the ruminants it is able to subsist for long periods mainly on the lichens of various kinds, known collectively as reindeer moss, which on many parts of the barrens are uncovered by the strong winter winds. In places where this food is covered with snow the sharp-edged hoofs are used like shovels, and help the resourceful animals to glean an abundance of their staple forage. In that great area of half-dwarfed spruce where many of the herds choose to winter, certain varieties of their favorite lichens grow on the low branches of the sheltering trees, and serve the animals well, particularly in the times of crusted snow.

Fortunate it is for the natives of Arctic America that the caribou's range is wide, and that the wanderlust does not break out everywhere at once. By reason of a certain fickleness of character scattered bands may elect to remain in even a far northern section when the bulk of their kind have traveled far to the south. True it is that this very fickleness may sometimes result in the disappointment, and even starvation and death, of the overtrustful native, but after all, the caribou, too, must live. Over the larger part of their great range most of the bands respond to the urge to travel southward at the approach of winter. Ever changeable, they vary their course because of the wind or for

other reasons, but in general they move toward the shelter of the fringe of dwarfed trees far to the south. Band after band joins the throng until the gathered horde rivals in numbers the myriad masses of the buffalo in the heyday of its abundance. Perhaps a band of Yellowknives, faring out from the Big Lake where they have spent the summer living on fish, and long meat-hungry, are camped on some barren hill where they anxiously scan the northern horizon for the welcome sight of the antlered herds. At such times the slaughter is great, and the hungry look on the faces of children and parents gives way to one of well-fed contentment. The herd has paid its toll and journeys on to quieter valleys.

A favorite place for intercepting the migrating bands is some time-honored spot where the trails converge to take advantage of a favorable crossing of river or lake. Many factors may conspire to determine such a location. Over the broad treeless wastes certain sections are so filled with sharp frost-riven rocks that the caribou dislike to cross them; other areas afford insufficient forage and must be avoided by the large herds. So, while most of the converging trails lead to some stretch of quiet river, it sometimes happens that the water trail leads across a broad lake. On a certain great lake on the borders of the barren grounds known to the Yellowknives as the lake where the caribou swim amongst the ice, such a crossing is made. From the water's edge on its northern shore, where the deep trails testify to age-long use by the hurrying throngs, the restless animals take the water to swim to a shore invisible in the hazy distance. Some instinct implanted in them by the experience of past centuries; some urge impressed on the mass by the dominant leaders who may remember that in years past they have been taught the way by their guides; who shall say by what power the antlered bands have the faith to breast the cold water, certain that in the distance they shall take up the broken trail that leads on to pleasant pastures. "He who from zone to zone guides through the boundless sky" the certain flight of the wild fowl on their migrations, has taught the caribou where to swim. Many of these crossings have seen long use, testified alike by the appearance of the trails and the traditions of the natives. In some cases they have helped to identify lakes and rivers imperfectly mapped by early explorers who recorded in their journals the story of the swimming bands.

Generally speaking, the earliest of the southward-moving bands reach the northern fringe of the forest in August. They keep on straggling in and it may be October, and the season of driving snows, when the majority reach the woods. In September the horns of the males, which all the summer have been gradually adding to their bulk, are full grown and hard, and the soft velvety covering is removed by rubbing on trees or rocks. The old bucks are now in their finest fettle. Their coats are thick and full, for during the past few weeks they have rested and pastured well. Working leisurely northward in mid-summer, they have met the females and young as they returned southward from the northern barrens. The broad, thick layer of fat on the back, the *depouillè* of the voyageurs, which serves to nourish the animal during the frenzied days of the mating period, helps to fill out their rounded contours. On the throat and neck a



A FAVORITE PLACE FOR INTERCEPTING MIGRATORY BANDS

At some river or lake crossing in primitive times the natives speared the swimming animals as they strove to gain the shore.

fringe of long hair, white to its roots, serves as a challenge to rival males, and may be spread and flashed at will, signaling across the plains the boastful fact that here comes one who fears no foe.

Then follows their mating, that season of madness from which none of earth's inhabitants are free. Following this important period most of the caribou pass the winter in herds of various sizes among the half-dwarfed woods which spread in a broad fringe between the heavier forests and the treeless barrens. Let it not be forgotten that we speak of the large bands of the main barren grounds, but that at the same time smaller herds have remained here and there in favored places far to the north. From the testimony of reputable travelers of a few years ago, the numbers of these great migrating bands, when chances favored their aggregation, were almost beyond belief. Herds estimated to contain one or two hundred thousand individuals have been observed under circumstances that permitted reasonable estimates.

After the mating season, when the bucks need no longer strive for mastery, the heavy antlers are dropped. Alone among our large ruminants the female caribou also carries these weapons, smaller and weaker than those worn by the bucks, but sometimes so large that it is difficult for the hunter to distinguish the sexes at a little distance. For some reason the does retain their horns all through the winter. As summer approaches, for there is little interval between winter and summer in caribou-land, the animals move northward from the woods. The females precede the others, for most of them are to have their young near the Arctic coast. The calves are born in June, and as is fitting for a species which is ever on the move, they are active within a few hours of birth.

CARIBOU IN WINTER PASTURES

At this season the animals are able to paw deep in the snow for their favorite forage.

At this season, the so-called barren grounds belie their popular name. Every valley is green with lush grasses and sedges, and among these grow many bright-blossoming herbs, where butterflies and bees flit about, seeking nectar, and paying for it by carrying from flower to flower the precious pollen. Many species of waterfowl ripple the shallow lakes, loons call to their fellows, and on the meadows plovers and sandpipers of many species, some of which have wintered on the pampas of Argentina, lead about their precocious stilt-legged babies. He who has seen the barren grounds in summer ever after longs to return to this land with its long bright days, and its brief cool nights of mystic twilight.

Always, wherever they go, the caribou herds are attended by wolves, usually in pairs or family groups, which depend to a large extent on the sick or crippled individuals. There is little evidence that they are often able to capture the young caribou, which argues well for the speed of the little creatures. Perhaps, when first born, they give off little scent, as seems to be the case with many of the deer tribe. At any rate, from youth to old age, in normal healthy condition, the caribou seem well able to escape their only natural enemy under most conditions. Their great speed, which usually enables them to leave him hopelessly behind, usually saves them. In traversing the rough rocky sections of their haunts, however, they are sometimes lamed or crippled, and in such cases have little chance of surviving unless they can reach an island, where they are safe from pursuit at least until the frost provides their ravenous foe with the means of crossing the barrier. Ice, indeed, unless it is covered with snow, aids the wolf in his pursuit, for he has then a great advantage over his quarry, although of all our large animals the caribou can best travel on slippery trails.

In the land where the caribou must pass the winter many bands of natives pitch their lodges. Has not the Great Spirit sent down from the north for their benefit these hordes which mean clothing and food? One of the earliest needs is a supply of skins for clothing. These must be taken when the coat of the animals is partly grown, before it becomes too long and bulky and acquires that brittleness which comes with full growth. Fat, which is the butter of the Indian, must be laid up against the bitter cold of the short dark days, when hunting is difficult, and when only a little clothing and food means the difference between comparative comfort and grim death. And so, with his seasonal movements and reproductive duties, and avoidance of enemies, and perennial search for food, the life of the caribou is full, as is well with the creatures of earth.

We have spoken of the value of the caribou to the men of the north, for to several tribes it is, more than any other species, the factor that enables them to sustain life. Under primitive conditions the Indian worked hard for his food and clothing, for the bow and arrow necessitated close approach. In favorable places in the scattered woods fringing the barren grounds he sometimes placed nooses of rawhide in the paths, aiding his art by cunningly laid barricades of brushwood. Under certain conditions a trap was made of walls of frozen snow, furnished with an inclined plane made of a huge slab of the same material, so balanced that the caribou tilted it and fell into the pit when he attempted to reach the pile of moss temptingly placed on its farther end. Various other artifices, some of which took advantage of the curiosity of the animal, were utilized to accomplish its destruction. Even the antelope is not more anxious to investigate any novel sight that he does not understand than is the Arctic caribou.

The Indian's greatest opportunity, however, came when the migrating herds were intercepted at a crossing, and from the small birchbark hunting canoes both men and women speared the swimming animals as they strove to reach the

opposite shore. Yet even this method was not all play, for the caribou swims the easiest of all our large animals, the young ones keeping close in the wake of their elders, who lessen the resistance for them. Under such conditions the Indian was sometimes wasteful, but by what right do we blame him? He has lived mainly on caribou through the long ages since Indians and caribou first found themselves in the land, and when both were discovered by Europeans apparently had not reduced the stock. Compare this condition with the result of a hundred years' havoc among the wild game of the world by the self-styled civilized white man and his gun. With a death-dealing persistence diabolical in its planning and execution, by his craze for sport and gain, he has brought the majority of the species of large animals of the earth to a point where their very existence hangs in the balance.

Such has been the fate of the caribou over large areas of its former range. In that part of the western Arctic where the pursuit of whales was long profitable, that industry has spelled doom to the caribou. From Bering Sea to Coronation Gulf, the presence of wintering ships with their large crews has resulted within the past fifty years in the virtual extermination of these animals, which there had limited ground to range over. Each ship had its coterie of Eskimo helpers, and these supplied the crews with meat and skins. And so over this long stretch the caribou, which for ages had done its full share to support a race of primitive men, has succumbed to that form of barbarism which we call civilization. The final touch has been given the picture within the past few years in northwestern Alaska, where the herds of ill-controlled domestic reindeer, ranging the territory of the few bands of wild caribou there surviving, are absorbing and will eventually displace them.

Over the great area of the main barren grounds between the Coppermine and Hudson Bay, the picture is not so dark. One very large area has been set aside as a refuge where no white man may hunt. Only on the fringe of this do the natives live in any numbers. Here let us hope the caribou will long remain in abundance, its great herds yearly making their pilgrimages between the Arctic Sea and the distant forest. Let us trust that lovers of Nature the world over, even though all of them may not be permitted to see the antlered thousands, may yet know that in that far-off land one race of wild creatures has been permitted to survive.

Indians' Hair

By G. F. Ferris

THE TRAVELER who wanders through the wilds of the west coast of Mexico, at least of the State of Michoacan, will not infrequently see upon the trunks of trees or on the under-sides of overhanging rocks curious black patches. Sometimes these patches are quite large, covering perhaps as much as three or four square feet.

If one examines them closely, they appear to be composed of short, coarse, black hairs and because of this the natives call them "pelo de los Indios" or "Indians' hair." If one passes his hand over the patch, it will be seen to move and the hairs begin to wave wildly about, or the patch may even break up. It can then be seen that actually it is made up of hundreds upon hundreds of small animals with extraordinarily long legs.

These animals are what we commonly call "daddy-longlegs" or "harvest men." Scientifically they are known as *Phalangida* or *Opiliones,* and they are rather closely related to the spiders for, like the spiders, they have four pairs of legs. There are many hundreds of species, some of them of most peculiar form, and while many are short-legged many others have the legs extremely long and slender. The very small body is carried suspended from the legs as if by a series of derricks. The species that makes the patches of "Indians' hair" has legs that are three or four inches long while the body is not much larger than a pill.

"DADDY-LONGLEGS" IN CLOSE FORMATION

A strange gathering of insects which looks like hair, a fungus growth or an animal climbing.

The species that makes these patches clings, perhaps by its forward legs, to the surface upon which it rests and the other legs hang loosely down, giving the appearance of a mat of hair in which the bodies are entirely concealed, for the animals crowd very closely together. The particular species that is responsible for this phenomenon is not determined. Neither is it known why the animals congregate in such a fashion. Possibly the habit is connected with the season, for they were seen by the writer only in the month of January, which even in this part of Mexico is comparatively cool. Somewhat similar gatherings are known among other insects, especially among the "lady bird" beetles, some species of which gather in enormous colonies in order to pass the winter, lending each other as protection against the varying rigors of the weather.

The Migration of Don Q

By Irene Finley

PHOTOGRAPHS WILLIAM L. AND IRENE FINLEY

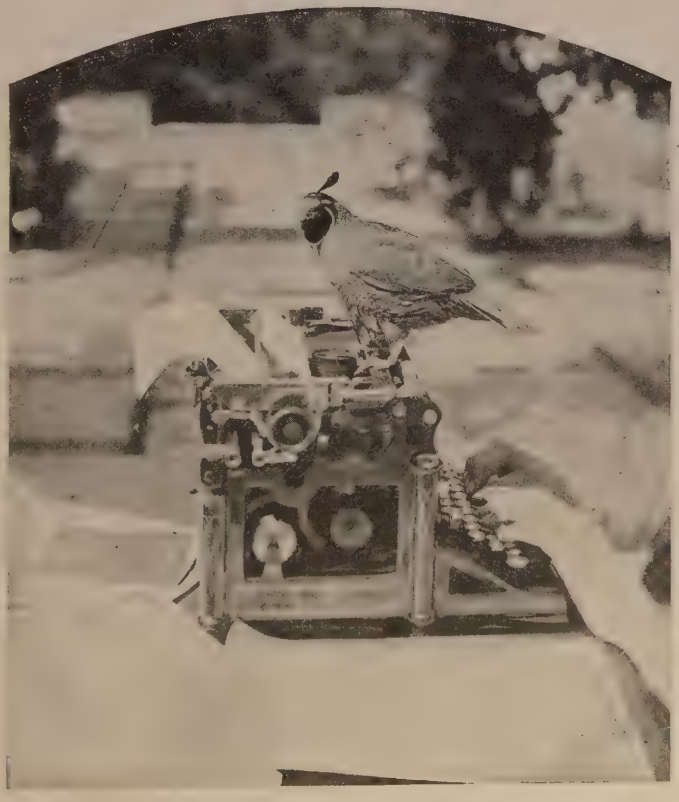
This is the second chapter in the "Story of Don Q," a chapter fraught with new and strange experiences for him. Next month we will visit the east with him, as he makes new friends and meets new windmills at which to tilt.

IT WAS Thanksgiving of 1925. Don Q, the California quail, was five months old, and he was about to start on the most unheard-of and unnatural journey a bird ever took. For that matter, all of his five months had been unbirdlike. He had become, quite from his infancy, a personage in a human home, not a mere member of a race, but an individual. Strange and unhappy things had happened to him on the very day that he was born on the shaggy, thicketed slope of the river, which turned the whole tenor of his life. Only far back in his dreams like a dim memory had he ever known the hushed wooded bank with the river gurgling below, the wild ecstasy of picking his way between the dewy blades of grass in the fresh morning, stalking careless insects or springing into the air to pull down weed seeds. The quiet hillside had been the home of quail children for years.

In the twinkling of an eye, by a turn of fate, he had become Don Q, and for him had been substituted a secluded, safe home devoid of all the dangers and delights of his wild brothers, a restricted and regulated routine of life and an artificial bill-of-fare. Now a new and more unreal adventure was to be thrust upon him.

There was even more of a festal air about the house than turkey and cranberries. Don Q felt it, and stalked stiffly about among the luggage that towered above him. There was a journey afoot. Members of the family bustled upstairs and down. The door bell rang. It was callers. Then there were noise and greetings, and when they started to leave everybody went out on the front porch to say their goodbyes.

Don Q loved to go outdoors, to scurry in and out between the shrubbery, or to play hide-and-seek in the gladiola garden where the stalks loomed high and made green walls. This was his chance. The hall was empty. He pattered across the stone porch and out upon the gravel driveway. Nobody noticed him. They were all too busy talking. He loitered over to the bed of ferns and, stretching up, snipped off a few of the lacy tips. They were poor substitutes for the weeds that straggled up through the old orchard fence, and there were no particular seeds on them, but they tasted of the out-of-doors at least. Beyond the



LOOKING OVER THE MANUSCRIPT

The typewriter, on which he could ride, always excited and amused Don Q by reason of its activity.

DON Q IN A PULLMAN DRAWING ROOM

This leather and green plush sanctorum was a new and strange place, with whirring windmills of metal at which to tilt.

DON Q DISCUSSES PHOTOGRAPHY

With his Buddy and official photographer, Mr. William L. Finley, the quail considers whether the subject is worth a few feet of film.

grape arbor he could glimpse the open field—clover and wild grasses. There was the fragrance of the earth in the air, and thistledown from the balm trees floated up the hill. Some day he would be free and wild again. But he was young and unfledged and not yet valiant for bold decisions. He stood rooted to the ground, stiff and straight. The fields looked a long way off. He settled

WHEN JUST A YOUTH

A flash-back at Don Q, as he was in the days of his early companionship with man.

down and began restlessly to pick up gravel here and there. It was at least better than the golden sand in his feed box, which had come out of a package of canary seed from the grocery store. This rough gravel had a river tang.

He stopped. There was no sound of voices and no people were in sight. The front door stood ajar. It was quite a way across the wide driveway to the porch, and there were lonely clumps of shrubbery where cats often prowled. Anything might happen. But he had to reach the door, and he must go now. He stood on his tiptoes and looked about, then held his head high, and stepped gingerly across the gravel toward the door. The threshold reached, he turned and looked over his shoulder. It didn't look so ominous now. He fluffed his feathers comfortably, flirted his tail and sauntered casually through the hall into the study, picking up bits of nothing on the way. Here he joined the family group, who had not missed him.

It was time to depart for the depot. Don Q's diminutive traveling house was loaded into the back of the automobile along with numerous bags, suitcases, a film case, a typewriter and a bag of provisions for himself. This latter consisted of hard-boiled eggs, bird seed and apples. It was all very queer, but he said nothing and abided by the decisions of his superiors. Anyway, he couldn't see what was happening because he was done up in brown paper like any other package.

This had never happened to him before, to be shut up in such close quarters and wrapped in darkness. His relatives in the woods knew what the fear of the night was, the lurking enemies of the quail that prowl in the dark, the glowing eyes of the bobcat or weasel that search out the sleeping covey and spring upon them. But they seldom catch the wary birds unawares. There is safety in numbers, and they burr away like bullets into the darkness.

Don Q was not really afraid; he was uneasy and bewildered. Even though sudden noises startled him sometimes, he had learned that they meant nothing in his household, and no harm ever came to him. There was a humming sound around him now, and his little box swayed and bumped against the other bundles in the car. Then it stopped, and he realized that he was being carried to some other place. When the paper was removed, he found himself down on the floor of a tiny compartment and very dimly lighted. It was the washroom of a Pullman drawing-room. In the half light, everything was unnatural—clothes hanging on the walls and many other puzzling things. There was a constant swaying movement that kept him busy balancing on his feet, or he bumped against the walls. Somewhere a queer clickety-click continued beneath him all the time.

Every once in a while there was a jerk, and things stopped so suddenly that he almost fell over on his nose. Then it was all still. Shadows moved across the window, and in a wild bird's life shadows always meant danger.

DON Q IS GROWN UP

This photograph is in sharp contrast with the scraggly bird taking his bath in the oval above.

The little quail froze in terror. A moment later he gave his shrill clarion cry of alarm. It brought one of his family in the next room out of bed in a hurry, to whisper quickly: "Hush, Don Q! They'll put us off the train!" So the night was slow and tiresome for him, more fearful than if he had been alone on the hillside, waiting for the daybreak to come. Such is the way of trains en route.

In the morning there was relief from the dread and noises. The wire on the front of his little cage was loosed, and he walked cautiously out on a green carpet. All was quiet. It might be all right. He began to pick up bits of dirt on the floor. Then he went noiselessly to his seed cup, ate a good breakfast of seed and boiled egg, and had a drink of water. But things were still moving, and he didn't feel right. He walked into the drawing-room where the people were, but it was all strange everywhere. He felt warm and itchy. He hunted around under the seats and finally flopped down on the floor, fluffed out his feathers, and began to shuffle them vigorously. But no powdery dust flew up in clouds as it did in the garden at home, so he got up and walked off, discouraged. Didn't they know a quail needed a dust bath every day? He fluffed himself into a ball and hunched his head into his shoulders, watching things through half-closed eyes. This was no place to stir things up, that was plain to him.

HE POSES FOR THE FILMS

Ever a picturesque actor for the silver screen, Don Q seemed to take pride in his art.

After a while he flew up to the luggage rack and peered down at the people in the seats below. They gave him some lettuce and seed up there, so he woke up and began to scratch and kick particles down their backs. A hat in a paper bag occupied the rack also. He turned his attention to that and pulled and rattled the paper. He jerked off bits of the edge and ate them as if they were tidbits. The paper shook and rattled and must be some kind of seed even if it didn't grow on stems. Finally he felt a frenzy of tearing paper and began to sling pieces down as fast as he could.

Every little while he settled down for a snatch of a nap because he had had a bad night. He rested his bill on the brass rail and slept for as much as two minutes. Then

FORAGING ON THE PULLMAN CARPET

Don Q diligently picked up specks of dirt on this entirely new kind of greensward.

he was up for more exploring. At the end of the luggage rack on the wall, a small shining windmill was whirling deliriously. It blew a strong draught of air over him and tantalized him. He stepped noisily over the hat-bag and made ready to challenge the windmill. Just then the bell rang. He started, and the feathers of his neck bristled. A black face peered in at the door. "Breakfast is bein'—"Where'd you-all git that!" Don Q raised his head and shouted at him: "Take-care-there! Take-care-there!" and he flapped his wings in a challenge. The door slammed and there were hurrying steps.

"Now you have offended the whole railroad system, Don," said one of his friends. And sure enough. There was an authoritative rap on the door, and a blue uniformed figure stepped in. He said nothing, but his eyes roamed around the room. Don Q had gone back to settling matters with the dancing windmill, but he peeked over the edge now. "Have you got a ticket for that?" asked the conductor coldly. There was silence. All at once Don Q dropped lightly to the top of the frigid blue cap and began to pick at the gold braid on it. He circled around and around, chuckling softly in his enjoyment of the glittering band. Then he stepped to the blue shoulder below and cuddled up against the official ear. And that time he got the ear of the railroad.

"Well, well, I guess he's a good fellow," laughed the big conductor as he bowed himself out.

Two days later the rattling and bumping journey was ended. Don Q rode in the dark again for a little while; then he found himself in the sunlight of a golden room with green ferns and plants and crystal tanks of silvery fish, and a little fountain with a pool below for him to drink in. This was his new home in New Jersey. It was all very different from the shrubby hillside of his baby days, but his friends were here, so it must be all right.

The Compass Medusa

By Waldo L. Schmitt

Curator of Marine Invertebrates, United States National Museum

THIS beautiful jelly-fish, for the moment idly drifting by, has been called the Compass Medusa, because of the striking, rayed ornamentation of its bell, or more technically, umbrella. The species, *Chysaora hysocella* (Linnaeus) is not uncommon in the Mediterranean and on both sides of the Atlantic. The color as it has been observed in Chesapeake Bay is highly variable. Sometimes it is pale, a nearly uniform, milky ocher yellow, and at others marked with radiating streaks of rich red-brown, which gives to this color phase its common name.

THE GRACEFUL COMPASS MEDUSA

A beautiful jellyfish whose life history is a fascinating study in the field of marine invertebrates.

Around the margin of the bell or umbrella are twenty-four hollow tentacles, capable of extending several times the length shown in the illustration, and between them thirty-two marginal lappets all told. The simple, central mouth opening has the four perradial angles, so-called, developed into long, trailing, gelatinous lips, the beautiful fringed, curtain-like tentacles hanging down beneath the center of the bell. These oral arms, as well as the marginal tentacles, are richly provided with batteries of nettle cells. These nettle-cells, — better known as nematocysts,—serve not only as weapons of defense, but also in securing the prey of this medusa. Unlike so many of its near relatives, which feed upon the smaller crustacea and fish, it lives upon other medusae and jelly-fish-like organisms, and oceanic worms.

In the Adriatic, where its life history has been studied in detail, the medusa is found from November to April, and is mature in winter. It often produces in the same individual both male and female germ cells, and this frequently in a very peculiar manner. Usually young individuals are male; middle aged ones, both sexes, producing both sperms and eggs, and old ones female. In other instances, however, the medusa is of one sex through life.

The particular group of oceanic jelly-fishes to which the Compass belongs as regards their life cycle exhibits that remarkable phenomenon known in both the plant and animal kingdom as the alternation of generations. The fertilized eggs of the free-swimming medusa develop into little hairy, mobile larvae, which after a time settle down and grow up into a little plant-like organism, composed, when mature, of, as it were, a stack of little jelly-fishes, nested one in the other like so many saucers. By continued constriction the little plant-like organism pinches off one after the other of these saucers, which swim away as embryo jelly-fish. These with further growth and development form mature, free-swimming jelly-fish and so complete the cycle. The one generation is the free swimming jelly-fish, the other stage is called the sessile scyphistoma.

The scyphistoma is for all the world like a little translucent-white, sometimes faintly orange, sea-anemone. When alarmed it shrinks to half its size, and is most inconspicuous, but on the other hand it can expand and stretch so that it appears to swallow prey much larger than itself. Like the anemones, too, as fixed and apathetic as its movements may seem, there are few denizens of the sea that are more voracious, or secure with greater ease the prey that strays within reach of their tentacles. The scyphistoma in the process of dividing into the jelly-fish saucers is called a strobila, and the process strobilization. The little jelly-fish during their early immaturity are called ephyrae.

The scyphistoma is quite tiny, scarcely an eighth of an inch in length, the same being the diameter of the ephyrae when first liberated. At four weeks the little jelly-fishes measure about half an inch across. In seven weeks they have attained the normal form of the adult. At about thirteen weeks full size is reached, nine inches or so, the maximum recorded being about twelve inches in diameter.

THE WISDOM OF THE OWL

This bird is credited with the qualities of a veritable Solomon.

There is much food for thought in this entertaining article of comparisons. No doubt many lovers of Nature can think of other instances where the wild world has beaten man in ingenuity and invention to overcome obstacles to existence. Mr. Brooks has interestingly summed up a few of these examples. Can our readers think of others?

OF ONE MIND

By Fred E. Brooks

(PHOTOGRAPHS BY THE AUTHOR)

THE CUNNING OF THE FOX

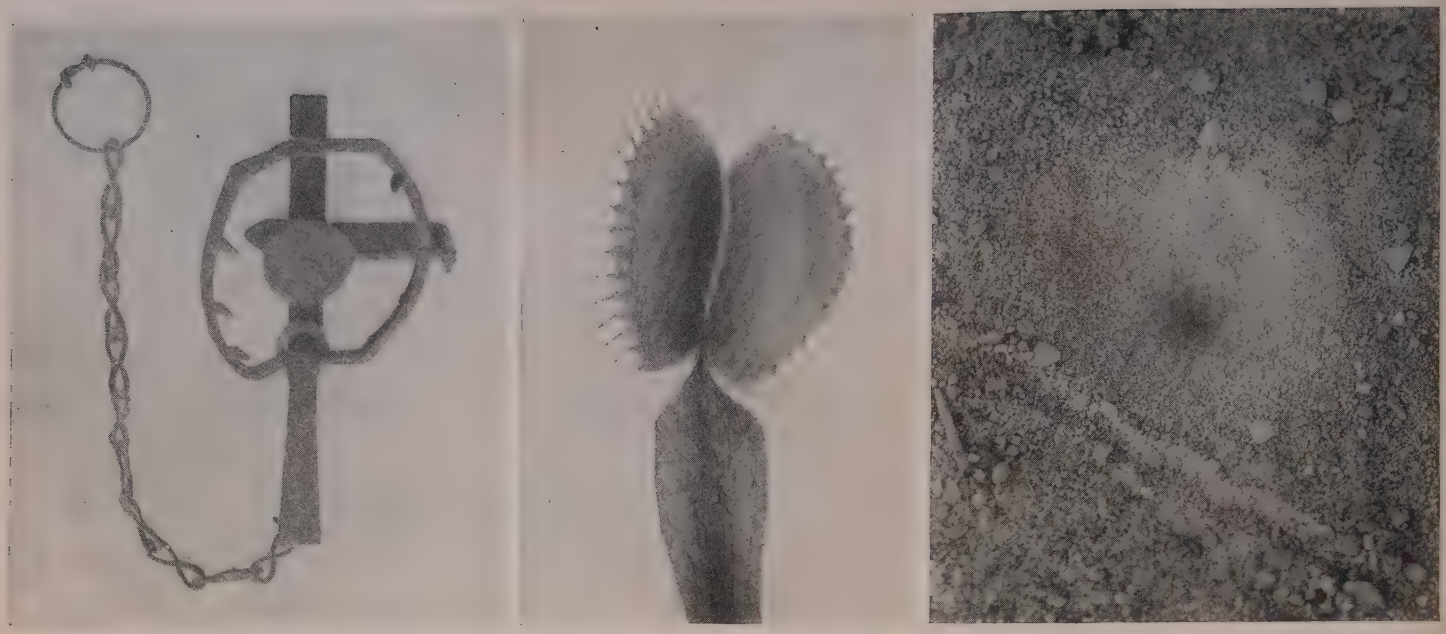
An attribute for which this member of the wild world is proverbial.

"ALL FLESH is grass," declared an ancient seer, and several modern writers speak of the "human nature" of plants and animals. The flowers "toil not, neither do they spin," nevertheless, they behave like human beings in a good many ways. They love the association of their own kind, they form communities, they provide elaborately for the welfare of their offspring, they protect themselves against enemies, they eat, drink, breathe, sleep, grow, and when they die some of them leave the world better for having lived in it.

We may, of course, find more resemblances to ourselves among animals than among plants. Much of our affection for birds and mammals, both domestic and wild, is due to the human-like traits which we are able to see in them. Some of these lower animals have a language of their own, and, in addition, may learn the meaning of at least a few of our words. One of my friends proved to me that his dog understood him when he addressed it either in an Indian tongue or in English. I doubt not that the dogs themselves have ways of saying things to one another which convey about the same ideas as were expressed by my friend speaking in Indian and English. Quite probably this particular dog may have understood fragments of three languages. Birds learn our speech, and we learn theirs. The bobwhites may not comprehend any of my words, yet I know perfectly well the meaning of at least six of theirs. They give voice to feelings of contentment, confidence, love, loneliness, suspicion and terror and the tones and modulations of their notes are like ours when we express the same sentiments in different terms.

HOMES OF MAN, WHITE-EYED VIREO AND SOLITARY WASP

To establish each home the occupants have labored hard, and to defend their habitation they will risk their very lives.



TRAPS OF MAN, FLOWER AND INSECT

Man traps with such devices as that at the left; the Venus fly-trap in the center lures its prey, and the ant-lion traps equally well.

Human-like acts have been observed among the insects, perhaps even before Solomon, some three thousand years ago, admonished a certain class of citizens to learn wisdom and frugality from the ants. The wise old king, no doubt, really meant that the ants are sometimes more clever in looking out for themselves than are we. Even at that, he was very moderate in his implied comparison of human and insect behavior. Within certain limits he might have gone farther and still kept within the bounds of truth. Insects are able to do many things which we, with all our wisdom, are not able to do. They take advantage of some natural laws about which we know very little, and have beaten us to a number of our important inventions and discoveries.

No human government has ever approached in perfection the economy, patriotism, self-sacrifice, devotion, and perpetuity to be found in the government of the honey-bees. Biologists have sought in vain for a means of sex determination in our race, but bees, wasps, and some other insects produce males, females and neuters at will, in accordance with the needs of the colony. Parthenogenesis does not exist in the human species, yet among the plant lice, or aphids, many succeeding generations normally occur in which all the individuals are virgin, but productive, females.

We have recently learned to send wireless messages, but the insects have long been able to signal one another relatively long distances by some system which we do not understand. One of our problems in illumination is to create a fire which glows, but which does not burn. So far, in our best lights, much of the energy of combustion is wasted in the form of heat. Light-producing insects, such as the fireflies, however, are able to kindle in their bodies a little blaze which is more than ninety-nine per cent light and less than one per cent heat. Long before man learned to warm his habitation with fire, the bees had discovered a muscular exercise whereby in very cold weather they could raise the temperature of their homes as much as thirty-five degrees Centigrade. We cool our rooms with electric fans, but before electricity was harnessed the bumblebees had learned to station individuals along their passageways to create cool air currents by constantly fluttering their wings.

In acquiring our present knowledge of things in general, we could, as Solomon advised the sluggard, have gone oftener to the insects for wisdom. The gardener might have learned points in his art from the ambrosia beetle, which plants beds of succulent fungus in its burrows to furnish nourishment for its young. The soldier might have learned the possibilities of poisonous gases in warfare from the bombardier beetle, which hurls discomfiting charges of an acrid gas at its enemies. The farmer could have discovered that good seeds are produced when the flowers are pollinated by watching the operations of the pronuba moth on Yucca blossoms. This insect, with amazing wisdom, gathers pollen from the anthers of the flowers and applies it directly to the stigma, with no other object, so far as we know, than to insure the formation of plump seeds upon which the caterpillars of the moth depend for food. The surgeon might have gotten hints on the use of anaesthetics from the solitary wasp, which thrusts its drug-laden sting into its spider or insect victim and by that means stupefies and preserves it as food for future baby wasps. Insects are the original paper, silk and honey makers. We have, perhaps, beaten them in the paper business, but our imitation silk is inferior to the genuine and our synthetic honey an abomination.

Consider, if you will, the matter of laying up stores against a time of need. A farmer loads his wagon from a heap of yellow ears in his cornfield and departs to store the grain in his crib. While he is absent, a chipmunk and a nuthatch are busy carrying grains from the golden heap in the field to secret hiding places. Nearby a dozen ants have found a belated corn ear-worm, which has fattened on the grain, and are dragging it toward the entrance of their underground nest. Still another evidence of the storing instinct is present at the heap of grain. The corn itself is composed mostly of food which the corn-stalk has stored for the express purpose of serving as food for baby corn plants at some time in the future. Thus all the creatures, man, chipmunk, nuthatch, ants and corn-stalk, have in some way, at some time, mastered the savings-bank idea. Perhaps, too, the man is just as likely to bungle his share of the task as are any of the others, for he has yet much to learn.

Man builds a home and bestows upon it his labor, his money, and the best of his art. The institution becomes sacred to him. He loves it and will defend it with his life against unfriendly intrusion. But he is not alone in this respect. The lower animals have the same instinctive love of home. Some of the mammals, birds, and insects devote a greater proportion of their time to home-building than man does himself. They, likewise, bestow love, labor and art upon their homes and they will defend them at any cost. So far as we can see, the attitude of the animals toward their homes is the same as ours in substance, and, sometimes, it does not seem to differ greatly in degree. Many are bound by ties of affection to the family hearthstone. Home is the common center of family life to all of us; we seek it for shelter and repose; when lost from it we become homesick. To the wandering man, or beast, or bird, or insect, return to the home nest often becomes the controlling impulse of life. Love of home impels men and ants to make warfare and establish boundary lines; it drives birds to thousand-mile migration flights; it is manifested in some way wherever life is found.

The lower animals have ideas similar to our own regarding a number of common rural practices. For example, a chestnut tree, growing near my garden, injured, with its encroaching roots and overhanging branches, the vegetables and flowers which I had planted. Desiring to kill the tree without felling it, I cut a girdle around the trunk. Within a few days the wood above the girdle was dying. I do not remember when I first learned that girdling would kill a tree, but I might have gotten the knowledge from either a beaver or a beetle. Both are proficient in that art.

Around a beaver dam in the mountains I found several trees which had been neatly girdled and killed by the animals. Perhaps the beavers had done this as the first step in the task of felling the trees and had given up the operation for some reason before it was completed. In that case the killing of the tree was not the ultimate object of the work. We have a common beetle, however, which girdles branches for the sole purpose of killing them. This insect is the hickory twig-girdler (*Oncideres cingulata*), a slender beetle of grayish color and about an inch in length. The beetles frequent the branches of hickory trees, and when the female is ready to deposit eggs she finds a twig about half an inch in diameter and completely encircles it with a deep, symmetrical furrow. The cutting of the furrow is done with the jaws, and when the girdle is finished the beetle crawls onto the deadened twig and inserts a number of eggs into the wood through holes which she bites in the bark. The girdling is an important part of the operation and the beetle often devotes several hours to the task. If the work is imperfectly done, and the twig fails to die, the young grubs on hatching perish in the sap which floods the egg cavities. The grubs, in order to live and thrive, must have, for their food, wood that is in just the stage of dying that the girdle insures. The mother beetle takes no chances in laying her eggs in random dead twigs, but attends to the details of killing them herself. One can hardly fathom the wisdom of the beetle in knowing that the girdle will kill the twig and supply nourishment and life to offspring which she will never see. We may only wonder if she obtained the knowledge through a long process of experimenting and reasoning such as we often follow in arriving at our ends.

Men have devised various kinds of traps for catching animals whose flesh and skins provide them with food and clothing. The insects, likewise, and their relatives have learned the art of trapping. The nets they spread and the pitfalls they contrive for unwary feet may well awaken our astonishment. The web of the spider is a familiar example of a cunningly devised and exceedingly effective trap for obtaining food.

Most country boys are familiar with the pits of the ant-lion, or "doodle-bug." "Mooney-holes," the boys of my

MAN, BEAVER AND BEETLE GIRDLE TREES

Man has learned that girdling a tree will kill it, but so have the beaver and the canny hickory twig girdler.

community used to call them. The ant-lion, of which there are about thirty species in the United States and at least three hundred in the world, flies with long, gauzy wings when in the adult stage. It is the immature insect which makes the pits. These pits are conical-shaped depressions made in sandy places, and are one or two inches across and nearly as deep. At the bottom, the insect conceals itself and awaits the coming of an ant or other small creature. When such a visitor crosses the brink of the pit the yielding sand carries it to the bottom where the strong jaws of the ant-lion await it. Sometimes when the prospective catch is about to escape, the ant-lion, with a quick jerk of the head, throws a little spray of sand upon it, causing it to slide down the incline where it may be seized. Day and night the ant-lion attends the trap for all its food.

Numerous plants have in some mysterious way hit upon this same scheme of trapping to obtain a portion of their food. The pitcher-plants and sundews are good examples, but the most wonderful is the Venus fly-trap, which grows naturally in swampy places along the Atlantic coast of North Carolina. The leaves of this plant are four or five inches in length and spread, rosette-fashion, over the soil much as do those of the dandelion. The end of each leaf is curiously formed into a flattened, two-lobed enlargement, each half of which opens and closes at the mid-rib like a hinge. The margins of this part of the leaf are armed with long spines which interlock when the device closes. The surface of this trap, instead of being green like the rest of the leaf, is dull red, resembling raw meat. Insects may be attracted by the color, but, when they alight to investigate the possibilities of food, the sides of the leaf spring together and the visitor is captured. Within a short time the glands which cover the part of the leaf enfolding the insect exude an acid fluid which disintegrates the insect and the dissolved product is absorbed by the plant.

This contrivance of the plant operates more perfectly than any steel trap which man has invented. It is perpetually baited, and when a catch has been made and the victim assimilated it sets itself again. A remarkable feature of the trap which the plant possesses is the presence of three small bristles near the center of each of the folding sides. These bristles correspond to the plate or trigger of the steel trap. When they are touched the trap springs. And here is a most astonishing provision of the plant's trap; the spines must be touched at least twice before the sides come together. If a seed or twig fall upon them, there is no second motion from the falling object and the trap does not spring. If an insect come, however, there is always a second movement which causes the sides to come together. A stone may roll down a bank or a branch fall and spring any steel-trap, but the Venus fly-trap catches only live things.

We do not know when in the remote past men first learned to make homes, to store up food for a time of need, to kill trees by girdling, and to capture animals by setting traps. Certainly there was a time, however, when men first thought of these things and began to carry them out. Perhaps the plants and animals, likewise, have arrived at their present skill and wisdom by slow degrees. In that far-away time when man first walled up the entrance to a cavern and claimed it as his home, were the artisans among the lower animals which surrounded him correspondingly crude? We may well wonder if at that time the government of the hive, the nest of the oriole, the girdle of the beedle, the trap of the ant-lion, were as perfect as they are now. It may be that they, like us, have picked up their marvelous wisdom and skill, bit by bit, along the road we have all traveled together.

HALLOWE'EN

PHOTOGRAPH MICHAEL SREENAN

The Story of Eenie, Meenie, Minie, Mo

By Marjorie Shanafelt

FOUR BABY white-footed mice lived in a decayed log at the edge of the woods. Their eyes were large and dark, their short tails were covered with silky hair that matched their gray jackets, and these were set off by their snowy-white vests. One day, as they lay with their noses buried under their pinky-white paws, a half-tall man with brown eyes and leather boots came looking for beetles and kicked their log to pieces. They were so scared they couldn't run away, and before they knew it the man had put them in a pocket of his coat and buttoned the flap down tight. They were too little to take care of themselves and the man had to rescue them or they would have died. After he had jounced and jolted them around for hours and hours, he unbuttoned the flap and took them out.

"EENIE"

White-footed mice have a fear of falling into space.

The woodland was gone. There was nothing to be seen but stacks of books in cases with glass doors. The blue sky with its smiling sun was changed into a square of dull-colored paper ceiling with a big electric light dangling from a string. The Man-with-the-Brown-Eyes put the four little mice into a pasteboard box. He put the box into a deep granite pan. The pan was meant for a playground, and the Man had cut a little door in the pasteboard box so that the mice could run in and out. They couldn't climb out of the yard though, for he had slipped a wire netting over the top of the pan and fastened it with some rubber bands. After a while the Man brought them some bread and milk. The four little mice had never tasted anything like it. They ate it all up. Then the Man brought them some more and they ate that all up. The Man thought they ought to go to sleep so he shoved in some soft cotton wool. The mice had never guessed there was anything so fluffy in the whole world. They worked hard until they had it all in the pasteboard box and as soon as it was in they went in too. Soon they were sound asleep.

In the morning when the Man-with-the-Brown-Eyes went to look, the pasteboard box was gone, absolutely gone! The granite pan was not empty though, not by any means. There was a great puff of something brownish. It was light and fluffy, like a dandelion gone to seed, and it wiggled when the Man touched it. The little mice had chewed up their pasteboard house and made a bed of it. They had mixed the tiny bits of paper with the cotton wool. That night the Man put in another pasteboard box, and the next morning the box was gone but the puff ball was even larger. The next night the Man put in still another pasteboard box and that disappeared, so the Man got a tin box and cut two little doors in it. The mice chewed and chewed on the tin box but they couldn't nibble off a single bit. Then, because they were really clever little mice, they decided that the tin box was worth living in, so they packed it as full of cotton wool as they could and moved in.

The Man decided that their names were Eenie, Meenie, Minie, Mo. They lived happily on cheese and yellow tomatoes until a day came when the Man had to go away on a long journey. He decided to let the Girl-who-worked-in-the-Museum take care of them. He carried them up to the Museum where the Girl put them in a large wire house. They liked the house very much because they could run and jump in it. Then, too, everybody brought them nice things to eat, such as mushmelon seeds, bits of candy, flax seeds, squash seeds, bread, cake, green leaves, and so on. It was a gay life.

"MEENIE"

His eyes were large and dark and very bright.

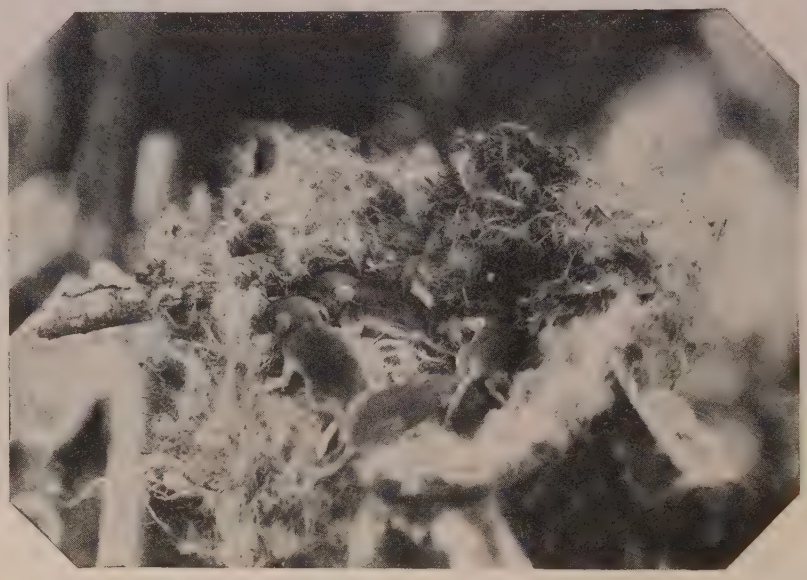
It wasn't very long until the Girl found she had to go out of town for over night, so she asked the Lady-who-knows-all-about-Rocks to feed Eenie, Meenie, Minie, Mo for her. When the Girl got back to the Museum, the poor Lady-who-knows-all-about-Rocks had very sad eyes and said, "O, somebody left the little door open and the babies all ran away. They are living under the bookcase. They have even carried away their cotton bed and put it under the bookcase." Then she smiled. "They come back and gobble up anything left for them to eat, but how they can run!"

The Girl thought a very wise thought—"I shall get a catch 'em alive trap." She spent a dollar for a mousetrap all embroidered in brass wire. It had a charming entrance that said plainly, "Won't you walk into the parlor?" The Girl rubbed the cage with the smelliest cheese ever cheesed and put the trap down close to the entrance of the big cage. She covered it with brown paper and some cotton so that the mice wouldn't be afraid of it. That night she began to wonder if any babies had walked into the trap yet. She wondered so hard she couldn't go to bed. Finally she put on her hat and went back to the dark Museum to see if even a single mouse baby might be in the trap. The trap was empty, but on the floor sat one baby washing his tail, holding it very carefully in his white paws. "Maybe they'll be

there in the morning," said the Girl, but they weren't, not that morning, nor the next, nor the next.

It was quite evident that Eenie, Meenie, Minie, Mo were playing around because of the bits of paper, seed husks, and crumbs that lay on the floor. Every day the Girl rubbed fresh cheese on the traps and moved them from place to place. She had several traps now, though one was very little. The storekeeper had given it to her because he said it wasn't any good.

As night after night went by without any babies in the trap, the Girl grew discouraged. She decided to try just once more. She put the cheese in a far corner of each trap, so that a mouse would have to come so far into the trap that even his tail would be inside. The Girl almost forgot the littlest trap of all, but she stood it off on one side because there wasn't any good place left for it. Then she cleaned up every crumb of food from the floor. That was on Saturday, and on Sunday she could not go to the Museum at all. Monday morning she hurried to the traps. She looked in the first one and there wasn't a thing. She looked in the second and there wasn't a thing, nor in the third trap, nor in the fourth. Then she looked in the littlest trap that wasn't any good at all, and there was a pink nose sticking out of the tiny window and two dark eyes looking back at her. "Oh," said the Girl, "you dear, naughty, runaway baby!" She held the trap inside the big cage and gave it a shake. Out fell the baby and right after him fell another baby. "Oh, oh," squealed the Girl, and started to set the trap down again. But, she saw the tail of another mouse. Maybe she didn't put that trap back in the cage again and give it another shake. Three babies!



"EENIE," "MEENIE," "MINIE," "MO"

The Man-with-the-Brown-Eyes found four baby white-footed mice in a home in a decayed log.

The babies had probably gotten into the cage on Saturday night, for they rushed to the water dish and drank and drank. After that they wiggled their whiskers at everything in the cage. They went in and out of the little doors of their tin box. They pulled and tore the fresh cotton until it was in little fluffy bits. Then they washed their faces and tails thoroughly for the little trap had mussed their velvet jackets. As for their feet, they were so dirty from running under bookcases that they looked like the feet of common house mice.

One mouse was still missing. It was hard to decide whether it was Eenie, Meenie, Minie, or Mo, but the Girl decided it was Mo because he just naturally would be the last one. Mo ate all the seeds that were left out for him and drank out of the little water dish but he just would not come home. It was discovered that he had fallen into bad company. Several times he was seen with a common mouse. The Girl named the common mouse Slippery Jim because he was undoubtedly responsible for Mo being able to keep out of the traps. It was most certainly Slippery Jim who rifled the traps of their eats. No matter how far back in the trap the cheese was put, in the morning it was gone. Slippery Jim must have hooked his hind toes over the trap's outside entrance while he explored the inside with his front feet and nose.

Inside the big cage Eenie, Meenie, Minie feasted and cavorted, cracking seeds and kicking the husks out between the wire bars. As they couldn't begin to eat all the good things that were put in the cage, they began to store it up. They put everything under the cotton-wool mattress in the tin-box bed. In time the bed became so crowded there was no room for the mice, they were pushing the ceiling off of their room. They decided to keep the box for a storehouse and, accordingly, moved the cotton-wool under a corner of the paper that lay on the floor of the cage. When the Girl lifted the paper, she could see a small hole running through the fluff and at the bottom of the hole she would find Eenie, Meenie, Minie fast asleep with their paws over their whiskers. Sometimes the girl could pick them up and stroke their little white tummies. They would lie very quiet as long as they were rubbed. They would never creep to the end of her finger and plunge off into emptiness as a house mouse would have done. White-footed mice are born with the fear of falling off and so they never fall.

When the Man-with-the-Brown-Eyes came back from his trip, he found there was no time to play with Eenie, Meenie, and Minie, besides they were big enough to take care of themselves now, and it was high time they were working for a living. So one day the Man and the Girl took Eenie, Meenie, Minie and walked and walked and walked until they came to a little house that is called Bernice's Bungalo. In Bernice's Bungalo are two big, roomy bunks, one on either side of a great stone fireplace. Now these bunks have been the homes of generations of white-footed mice, because the bungalo is just a place to come and play in, and toast wienies in, and make coffee in, and tell stories in, until the logs are just gray ashes with rose-colored lights, and then it is time to lock the door and go home in the starlight with a happy feeling scurrying around in one's heart or soul, or whatever each of us cares to call it.

Sometimes visitors are allowed to lift the bunk lids and peek down into a space partly filled with old magazines, and in between are little powdery nests, just like the one Eenie, Meenie, Minie, Mo made in the wire cage. The Man and the Girl put Eenie, Meenie, and Minie into a bunk with a lot of seeds, nuts, scraps of cheese, and cotton-wool for a new bed, but before they shut the lid way down they whispered through the crack, "Good-bye, babies."

And then they went away in the starlight, and left the three little mice to set up housekeeping in their big bungalo.

HERMIT'S RETREAT

By Wallace Hutchinson

PHOTOGRAPHS BY THE AUTHOR

THE HERMIT'S CABIN WITH ITS WEIRD COLLECTION

It is truly a strange habitat with strange inhabitants, one of which is below—a sacred cow as Nature made her save for the artificial eyes.

HIGH IN the Sierra Nevadas of California, near where the waters of Echo Lake go tumbling over the cliffs into the Lake Tahoe basin, there stands an old cabin known as the Hermit's Retreat. The house itself is unpretentious—a simple log shack with an old stone chimney set amidst tall scraggy lodgepole pines. But banked high against the rough-hewn walls and in the clearing surrounding the cabin are some of the most weird and fantastic artifices ever contrived by Nature and the skilled hand of man. Distorted archways, oddly shaped seats and tables, and grotesque animal figures formed from the twisted, gnarled and sun-bleached branches and roots of trees by a fanciful mind, greet the visitor on every hand. The entwined rustic seats recall the carved chairs of ancient China or the benches one sometimes sees in our own country, fashioned from the spreading antlers of elk. But the strangest forms in this museum of oddities are the animal heads and figures, as fantastic as the gargoyles of Notre Dame, which grimace from every nook and corner. Cows, horses, deer, snakes, lizards and many fearsome animals, to which Nature has given a life-like appearance, have been made more realistic by the addition of button-eyes, wooden ears and gaping mouths fashioned with a sharp ax.

Here amid these curious surroundings lived some twenty years ago an eccentric old man known as the Hermit of Echo Lake. His duty was to control the flood-gates of the lake, the waters of which are used for irrigation and power. This lake is fed by streams that rise in the everlasting snowbanks of the High Sierras far above the timberline. Its drainage basin covers a vast, rocky, mountainous country where the pines,

firs and hemlocks, swept by never-ceasing winds and bowed down by heavy winter snows, take on a stunted, gnarled and prostrate form. The branches, roots and stems of these trees, broken off by wind and snow or overthrown by storms, are each year carried down into Echo Lake by the spring floods. It was these odd-shaped and bleached pieces of water-soaked wood that the Hermit of Echo Lake delighted to collect and twist and shape into fanciful decorations for his retreat.

This was not the only means that this strange old man took to express his artistic moods. He was lavish in the use of blue and green paint both for the exterior and interior decoration of his cabin. Instead of wall paper in his shack he selected bright-colored labels from the thousands of cans and packages of foodstuff that he consumed in his lifetime, and pasted them on the rough log walls. But throughout all the handiwork of this creator of hobgoblins and wonderous beasts, there is an artistry which bespeaks of his intimate companionship with Nature in its moods of calm and storm, with the furred and feathered creatures of the woods, and with that beauty and peace which alone is known to those who live amid the solitude of gray granite peaks, emerald lakes and evergreen forests.

Today, Hermit's Retreat, the handiwork of this magician of wood, is carefully preserved for the visitor as one of the curiosities of the mountains and forests of California.

The Swan That Is Black

By M. S. R. Sharland

THE BLACK SWAN is a native of Australia and was one of several factors in establishing that country's reputation as a land of contradictions. The early settlers, with accepted ideas of Nature, were surprised to find the platypus, a mammal, laying eggs; the wild cherry, a fruit, growing with the stone outside; and the eucalyptus tree shedding its bark instead of its leaves.

So the conspicuous black swan caught the eye, and it holds pride of place among the birds in many beautiful legends and myths of the Australian aborigines. The bird is the totem of some tribes, the children of which are taught from infancy to imitate the bird's every action and call, to be docile, gentle, and kind to one another and to the birds.

THE BLACK SWAN IS AN AUSTRALIAN

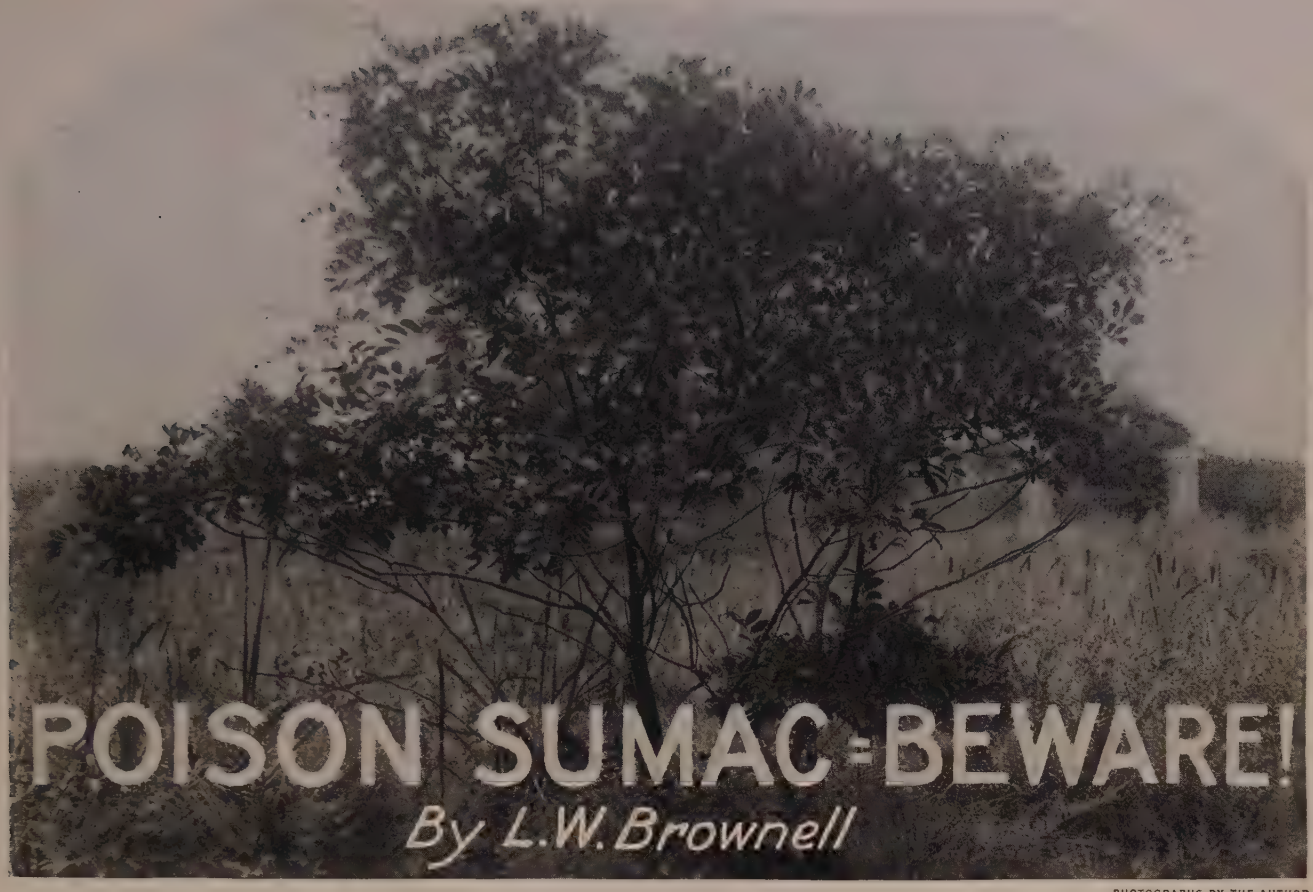
Here are two with an albino, which is an appearance of reversing the rule in swan coloring.

The black swan, strangely enough, has not spread to the northern parts of Australia, where in the extensive lagoons and rivers its place is taken by the pied or semi-palmated goose, a handsome, black and white migratory bird. In most of the lagoons and tidal estuaries along the southern coast line, including Tasmania, however, it abounds; and in different localities sanctuaries have been proclaimed to allow the splendid birds to breed.

All the year round there are numbers in the region of the reed-fringed bays, but at the coming of spring an irresistible impulse brings birds from all along the coast and from parts far inland, and when the time for nesting arrives the waters of the lagoon are black with them.

Nesting operations in favorable years commence in August and continue to the beginning of December. In tea-tree bush and grass, as well as in shallow water, the birds build their large, but nevertheless tidy, nests. Those in the water are made from marine vegetation pulled from the bottom and are sometimes eighteen inches above the surface, while those on dry land are made from grass. A full clutch of eggs averages six. While very solicitous towards his intended mate, the attitude of the male towards supposed rivals is far from neighborly, and until the majority of birds are paired the colony cannot be described as friendly. Hoarse cries from the males, screams from the females, a great beating of wings on water, as well as a constant movement of birds overhead, make a babel of sound that may be heard a mile away.

So many are the enemies of the swans and the difficulties which they have to meet so numerous, that were it not for the comparatively large clutch of eggs, and legislation, a few years would see them very nearly extinct. But under present conditions they appear to hold their own. The high tides, backed up by the southerly winds that occur in the breeding season, flood the already semi-submerged nests, spoiling the eggs or drowning newly-hatched young. Water rats suck large quantities of the eggs and hawks and crows steal them, to say nothing of the work of the "egger," who, under cover of darkness, succeeds in raiding the breeding grounds. Again, when the young are hatched from those eggs which escape, they are exposed to the attacks of wedge-tailed and sea eagles, which take a heavy toll, and are frequently snapped up by eels, which in the muddy channels attain to a surprising size. Then, to top matters off, the reared birds in some parts are specified as "game" and are allowed to be shot for five months of the year. For this, however, the protection afforded in the sanctuaries make some amends.



POISON SUMAC=BEWARE!

By L.W. Brownell

PHOTOGRAPHS BY THE AUTHOR

POISON SUMAC IN SUMMER

Its haunts are low, swampy places, and it is often found growing where there is a foot of water.

IT IS well that everybody who tramps the woods and fields, even occasionally, should know, beyond any possible chance for mistake, the poison sumac, or poison oak as it is sometimes called, for to most people its poison is most virulent, worse even than that of its near relative, the poison ivy. It is easily distinguished, however, from all other trees or shrubs, and once having learned its distinctive features one should have no trouble in avoiding it.

Poison sumac has been known, occasionally, to attain a height of twenty or twenty-five feet with a trunk diameter of four or five inches, but its usual growth is that of a shrub, sending up from the ground a cluster of slender stems that rise from ten to fifteen feet in the air. The trunk, when there is one, is short, rarely reaching a height of more than two or three feet before dividing into a number of stout, spreading limbs that form an open, rounded, bushy crown of coarse branches. The bark of the trunk and lower limbs is thin, smooth, or sometimes slightly striate, and light grey in color. The branchlets are reddish-brown for the first year and covered with small orange-colored lenticels. They turn to the greyish color of the rest of the tree at the end of the first season.

Poison sumac is common in all the regions between northern New England and northern Georgia and Alabama and westward to northern Minnesota, Arkansas and western Louisiana. Fortunately for those who fall easy victims to its poisonous qualities, it confines itself to low, swampy grounds that are inundated for a part of the year at least and it is seldom found to be growing in higher, drier places.

The leaf is compound, composed of from seven to thirteen leaflets, and the whole from seven to fourteen inches long. The leaflets, placed opposite, or nearly opposite, each other on the greenish-red mid-stem or rachis, are oval in shape and pointed at each end. Their edges are entirely smooth and even. When they first unfold they are bright orange in color and coated with a fine down. This, however, soon wears off, leaving them perfectly smooth, dark green and lustrous above with a scarlet mid-rib and lighter on the under side. In the fall, usually October, they turn to a brilliant scarlet or orange color, thus becoming a lure to the lover of autumn foliage who is all too apt to pick them in haste and repent at leisure.

The flowers appear in June and early July, before the leaves have attained their full size. They are yellowish-green and borne in rather narrow, drooping panicles from the axils of the leaves near the tips of the branches. These panicles are from three to eight inches in length, and the pistillate and staminate forms are borne on separate plants.

The fruit, which easily distinguishes this from all the other species of sumac, is a round, slightly compressed drupe, or berry, about one-fifth of an inch in diameter. When immature it is green, but when fully ripe it is a dull, brownish-white and slightly striped. The fruit of all the other sumacs is red. It is borne in loose, pendant clusters not unlike a grape and ripens in September or early October. These clusters are frequently to be seen hanging from the trees all through the winter months.

The wood of the poison sumac is light, soft and coarse

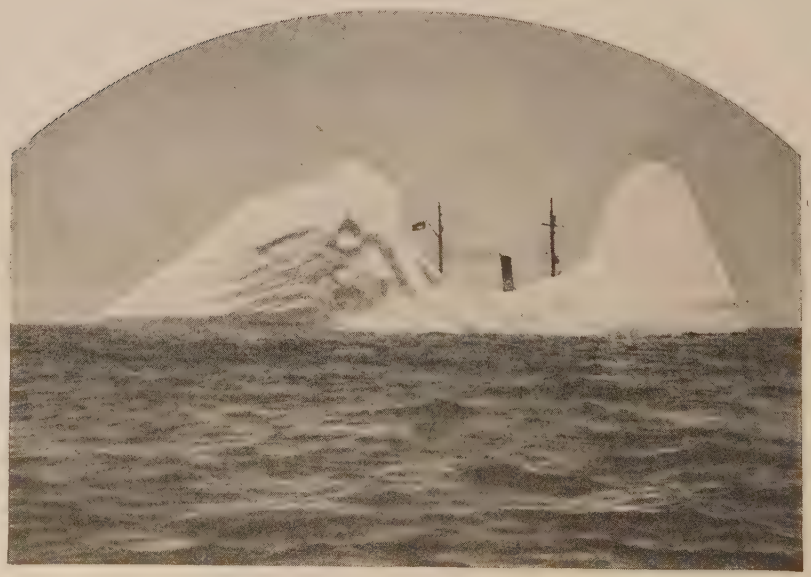
grained. The different layers showing the annual growth are clearly defined. It has no uses and, therefore, is of absolutely no commercial value. It is one of the most dangerous plants that are native to North America. It gives forth a nonvolatile oil similar to that from the poison ivy and even more poisonous. The juices of the poison sumac, though poisonous, nevertheless have considerable medicinal value. They may also be used as a lustrous black and very durable varnish similar to that furnished by the Japanese lacquer tree.

The symptoms of poisoning are acute irritation of the skin accompanied by a considerable swelling, an intense itching and the formation of small blisters which, upon being broken, exude a viscid fluid. If one is aware of having come in contact with the plant he should, as soon as possible, scrub the affected parts well with alcohol or soap and water. After the eruption has started, the application of a saturated solution of lead acetate is frequently helpful. A solution of baking soda, applied directly to the parts affected, will also frequently help to relieve the intolerable itching and will sometimes bring about a cure. It has been said also that the fluid extract of Grindelia, which can be bought at any drug store, is an infallible remedy in cases of poisoning by either of these two plants. It should be taken internally in doses of one drop every two hours and also applied externally as a lotion. I have never seen it used, however, and so cannot speak from actual experience. The very best advice that I can give on the subject is, unless you happen to be one of those fortunate ones who are immune to the poisons of these plants, learn to know them thoroughly and then avoid them. The poison sumac sometimes is known as poison dogwood, poison elder, or just plain poison tree, like its companion in crime, the poison tree of Florida.

FRUIT OF POISON SUMAC

In late summer, when the berries are fully ripe, they are a dull white color and are slightly striped.

ICEBERGS are frequently carved into fantastic shapes by the action of wind and water, and many tales are told by seafaring men of the curious pictures presented in some of them. In the accompanying illustration the photographer has caught a massive berg with contour which suggests some winged monster afloat on the surface of the ocean. This iceberg, even at its lowest part, almost hides the steamer lying alongside. Since it is a rule of Nature that only one-eighth of an iceberg appears above water, it may be readily seen that the berg shown in the illustration is of no slight dimensions. The steamer in the background is one of the vessels of the United States Coast Guard, on ice-patrol duty. Merchant steamers would give this berg a wide berth, once sighting it.



LIKE SOME WINGED MONSTER AFLOAT

Coast Guard cutter alongside an iceberg that wind, weather and water have carved into a strange fantasy.

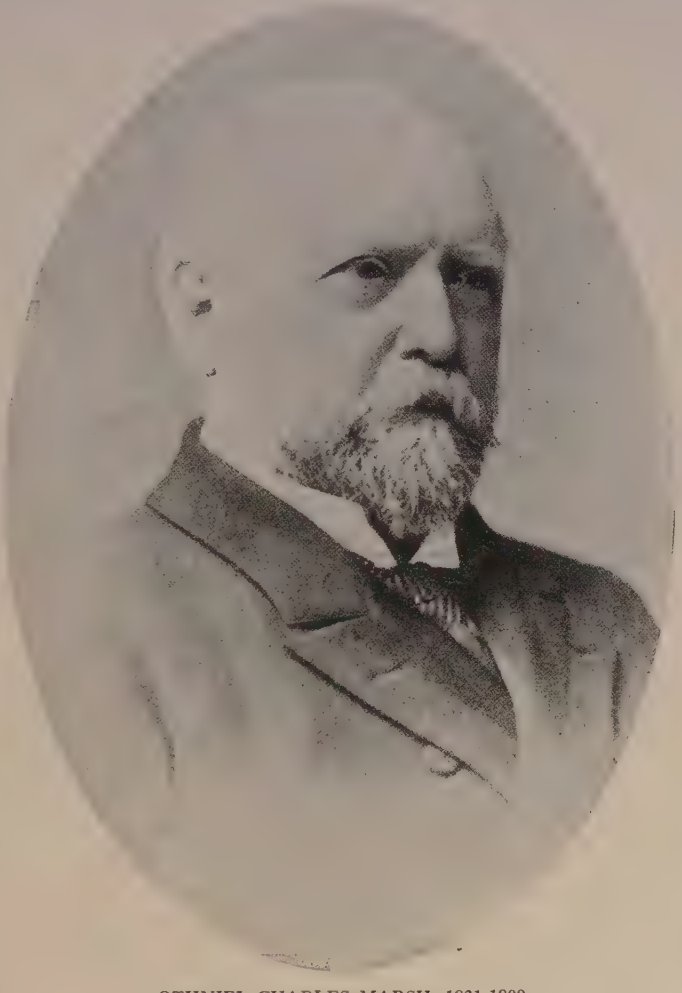
Marsh—Pioneer American Paleontologist

By Charles W. Gilmore

Curator of Vertebrate Paleontology of the United States National Museum

Vertebrate paleontology as a science in North America has a span of little more than one hundred years, but during that time great strides have been made, and no one has contributed more to this rapid advancement, or is more largely responsible for paleontology assuming its present importance in America, than Othniel Charles Marsh. His is a name that stands forth in the scientific world as a pioneer who brought to the science great enthusiasm and zeal and whose learning finally placed him in the front rank of American anatomists and paleontologists.

Marsh was born near Lockport, New York, October 29, 1831, the eldest son of an industrious farmer, and the eighth generation removed from John Marsh of Salem, the founder of the American branch of the family. Brought up in the country, strong in body and alert in mind, this boy was chiefly interested in out-of-doors affairs and early showed an individuality and resoluteness of character that often clashed with his stern and equally resolute father. When twelve years of age his father purchased a farm bordering the Erie Canal, at which time it was being enlarged, and in blasting out the rock workmen uncovered various kinds of minerals and fossils; these at once engaged the attention of the lad and apparently mark the first interest displayed by him in the profession to which later he was to devote his life. So absorbed did he become in this new undertaking that he refused to work on his father's farm, often spending whole days in adding to his collections and thus bringing forth further parental displeasure.



OTHNIEL CHARLES MARSH, 1831-1899

At the outset Marsh gave no indication of ever following an academic career, for in his early years he met with difficulty in gaining an education, as his father permitted him to attend school only during the winter months. Thus was his early training acquired in the schools of Lockport, but at the age of twenty through the influence of a maternal aunt he was induced to enter Phillips Academy, Andover, where he was graduated in 1856. He then entered Yale, receiving an A. B. degree in 1860, and his academic foundation was further rounded out by graduation from the Sheffield Scientific School and three years' study abroad in the universities of Berlin, Heidelberg, and Breslau.

During the years that Marsh was pursuing his early collegiate education his vacations were spent in making collections of minerals and fossils in the New England States and Nova Scotia. Likewise, while attending the universities abroad, he utilized the vacations for geological collecting trips and obtained many specimens of value and interest. It was thus that he acquired a true appreciation of the value and importance of fossils, a preliminary training that later contributed much to his success in his chosen profession.

Six years after graduation from Yale, Marsh was appointed Professor of Paleontology at that institution, a position that he retained until his death. As president of the American Association for the Advancement of Science and of the National Academy of Sciences, he took a leading part in the development and shaping of scientific research. It was after a meeting of the former society in Chicago in 1868, that he made his first visit to the west, and there in Nebraska and Wyoming such paleontological resources were disclosed to him that he immediately laid plans for their systematic development.

The first of his private expeditions, organized in 1870, after an absence in the field of five months, returned to New Haven with a valuable collection of fossil specimens. Expedition after expedition followed and for nearly twelve years these were financed from his private purse. It is said that during his life Marsh contributed more than a quarter of a million dollars to the object of completing his paleontological collections, in the acquisition of which he crossed the Rocky Mountains twenty-seven times.

In 1882, however, he was appointed Vertebrate Paleontologist on the United States Geological Survey, his previous experience peculiarly fitting him for the position, which also relieved him from the financial expense of constantly keeping parties in the field. During these years he conducted explorations over a wide area, in the states of Nebraska, Wyoming, Utah, the Dakotas, Kansas, Montana, and Colorado, which resulted in the discovery of large quantities of fossil vertebrate specimens, a great number of which were species new to science—fishes, turtles, serpents, swimming reptiles, flying reptiles, dinosaurian rep-

tiles, toothed and other birds, large ungulates, fossil horses and primates.

The difficulties and dangers under which Marsh labored and the enthusiasm shown in the pursuit of his aim may be inferred from the fact that the regions visited by these early expeditions, a number of which he led in person, were wild and unsettled, sometimes dangerous from hostile Indians, and often there was suffering from the lack of food and water.

The collections made in the field by Marsh and his assistants resulted in building up two distinct and important collections of fossil vertebrates—the famous collection at Yale, to which he devoted much of his personal fortune, and the basis for the Division of Vertebrate Paleontology in the United States National Museum in Washington, which comprised the specimens collected under government auspices, and of which he was honorary curator at the time of his death.

His discoveries in the west were productive of considerably more than two hundred separate papers which include three important volumes. While Marsh wrote a great number of what he designated as preliminary papers, he left a large amount of unfinished work. Several large monographic volumes on which large sums of money had been expended by the Government were left unfinished. The most notable of his monographic contributions to scientific literature are Odontornithes, or The Extinct Toothed Birds of North America, published in 1880, Monograph on the Dinocerata in 1886, and The Dinosaurs of North America which appeared in 1895. Though not an easy writer, he took great pains to express himself clearly, and his scientific writings are singularly free from carelessness of expression.

While the toothed birds and toothless flying reptiles, together with the evolutionary series of the horses, may seem to constitute the more brilliant of Marsh's discoveries, yet in all probability it was his researches among the dinosauria that added most to his fame. His discovery of many bizarre forms, the many published restorations of their skeletons and the monographic volume incorporating the results of his long research among the members of this striking group, made him the greatest authority of his time on these extinct reptiles.

Marsh possessed a keen insight and discrimination in selecting his assistants, and it is a well-known fact that many of the best collectors and preparateurs acquired their training under his influence. The methods of collecting and preparing vertebrate fossils for study and exhibition introduced in the course of his long experience form the basis for similar work in almost every paleontological workshop in America, if not in the world.

He was a firm believer in the theory of evolution and through his discoveries acquired many specimens that filled important gaps in the paleontological series. As a man Marsh was of forceful personality, keen mental attainments, and a happy wit which expressed itself in a fund of humorous stories and anecdotes. Besides his many papers on fossils Marsh published works on Archeology and Mineralogy. He took great pleasure in the cultivation of orchids, made an extensive collection of modern paintings, and was deeply interested in Japanese art. In recognition of his work in science he was the recipient of many medals, scientific honors and memberships in distinguished societies both in America and Europe.

While working among his fossils at the museum, in his sixty-eighth year, he was seized with a chill. Pneumonia rapidly developed and he died a week later, on March 18, 1899, thus bringing to its end an active and fruitful life.

A Beautiful Frog

By Walter Rose

TREE-FROGS of various genera are to be found in most countries of the world and are considered by many naturalists to be the most interesting group of tailless batrachians. Certainly they are the most beautiful. Comparisons, however, are odious, and any attempt to pick out the most graceful would certainly be challenged by the champions of other claimants. Putting aside as frivolous the suggestion that the judgment of Paris would be in favor of *Rana esculenta,* it is suggested that the golden apple might well be awarded to the Arum Frog or *Rappia horstockii.* This entrant for frog honors may be found in fair numbers on parts of the Cape Flats of South Africa by those who know where to search for it.

Though frequenting grasses, reeds, and low bushes near ponds or rivers, its typical site is in the arum bloom. Its usual position is down in the bloom. Its color in this position being ivory-white, its pink legs and sucker-provided feet being tucked right up under it, a casual glance into the bloom might pass it over. In darker surroundings its color approaches that of Jacobean oak, the change being a skin, rather than a sight, reflex. The male has a very dilatable vocal sac, the voice being a loud "Chee chee, chee." The eggs are laid in clusters of about twenty attached to the roots of water-weeds or the stems of grasses.

A SOUTH AFRICAN FROG

Here the Arum Frog is shown within the bloom from which it gets its name.

Tree frogs often resemble their chosen surroundings, and possess a remarkable ability to assume colors that match their habitats. Our common American species is so like the gray bark of the oak or maple that even the one trilling on the lawn may elude all our efforts to detect him at his musicale.

Some Interesting Things to See in October

By E. Laurence Palmer

FOR SOME reason or other people are frequently gratified to be considered "the center of things." We hear of places advertising that they are in "the heart of the Rockies," "the center of the great mid-west," and some even think, apparently, that the world is the center of the universe. Certainly October can justly be considered an out-and-out autumn month. By day we know that it isn't winter and by night we know that it isn't summer. In a way it combines the good points of both winter and summer, and so for the Nature lover afield there are innumerable points of interest at almost any time during the month. Those of us who have children get as much fun out of putting them to bed at night as we do having them get us up in the morning, and so we ought to get as much fun from watching wild life of the fields and woods retiring for the winter as we would watching them awake in the spring.

October is the month of "corn roasts," "bacon bats" and "Hallowe'en parties." It is the month when hunters begin to roam the fields and woods with dogs and guns, destroying in a single day many of the squirrels and pheasants and grouse which some of us have enjoyed watching for many days during the summer months. Many of these hunters will sooner or later come to the conclusion that there is as much satisfaction in a living bobwhite on a fence post as in a dead one on a piece of toast, and that the satisfying sensation persists longer in the case of the former. Nature lovers looking for companions will frequently be able to recruit splendid material from the ranks of hunters. Not all hunters will be as naive as the one who said that he loved Nature very much. Why he "actually watched two squirrels playing for a half hour" before he shot them. Surely that man had possibilities in him. Nature lovers without the desire to kill what they love will be able to learn much of interest in wild life from those who have the desire.

MIGRANTS ACROSS THE MOON

THE BIG BROWN BAT

The garage mechanic who tinkers on my car knows more about the habits of raccoons than many college professors of zoology whom I know, and can give me from his experience more genuine information about a good many forms of wild life than I can get from books.

Let me suggest, for the fun of the thing, that during October Nature lovers try to get a composite of the habits of some few kinds of wild life using as authority such personages as the best hunter in town, the barber, the garage mechanic, the milkman and others. You may learn some surprising things, to be sure, but I know from experience that you will enjoy doing something of this sort. If you have a Nature club, let two groups set out to see who can get the greater fund of information from these sources concerning a pheasant, for example. You may, if you wish, then check your own experiences against those whom you question.

Katydids may continue calling from the tree tops well into October. What is the latest date on which you hear one of these nocturnal debaters?

Make a flower census of a half acre of ground the first of the month and a similar one on the last of the month to see if any of these landscape decorators are beginning to be counted among the missing? If you live in a region where snows and heavy frosts come before the end of the month, as they did at my home last year, notice the effects of these happenings upon non-woody plants that stand tall and erect, and upon plants whose leaves remain close to the ground. Which show the greater mortality?

Since October is a month of harvest one can look in the markets for many interesting things with profit. For example, apples and pumpkins and bananas and oranges might be selected for observation. Apples have cores containing seeds arranged rather definitely. Are the cores of four, five or six sections, and is this number constant? Is the number of sections in an orange always the same, and, if not, what is the usual number? Are the number of ridges on a pumpkin always the same, and, if not, is there any approximate number which seems to be fairly constant? Does a banana peel divide itself more or less naturally into three, four, five or more strips? Is this number generally the same with every banana?

Man will not be the only animal engaged in harvesting during October. List as many animals as possible that you find engaged in actually storing up food for a winter supply. For example, how many of the following actually store food for future use so far as you can determine during October: woodchucks, chipmunks, red squirrels, deer, muskrats, meadow mice, deer mice, skunks, dogs, cats?

THE CHINA PHEASANT

THE COMMON LOON

Is the storage of food limited to hair-bearing animals or do other creatures such as fish, birds, frogs, snakes and insects do something of this sort? Certainly you will find that your experiences will help you answer at least a part of this question. If frogs, for example, store food, do all frogs do this, and is this the same with the other groups mentioned?

It may be difficult to observe the habits of many mammals after October, so, if possible, determine if mammals are uniformly sanitary so far as disposing of their body waste products are concerned. Do house mice and meadow mice keep the nest uniformly clean, for example? Probably, if you investigate, you will find that they do.

Paper bats will be in evidence around Hallowe'en time even if the real bats are not. The bats of the United States are useful destroyers of insects which they catch in full flight. Some migrate to the south with the birds in the fall, and some go into winter quarters and cease their activities when the seasons change. If you happen to live in the vicinity of a bat roost, determine, if possible, if they come out at approximately the same time every night or if they seem to govern their appearance by the intensity of the darkness.

Birds are, of course, interesting in October. The fall migration is on in earnest. Many of the smaller birds migrate at night, and you may hear them as you sit around the fire after a corn roast. On cloudy nights they fly lower and are heard more easily, and sometimes it seems as though flocks become lost or disturbed by something or other. Possibly you can readily distinguish calls which are made for the purpose of keeping flocks together and calls which are made because of some distress. If you have never tried to do this, begin some quiet October night. Many of the migrating birds have, of course, gone south by the beginning of October, so if you wish, another year you may begin to study birds by night earlier in the season.

Many birds that have been spending the summer rearing their young to the north will begin to appear in our bird lists again during October. Among these may be the common loons which made the nights of Canadian lakes so characteristic with their calls during the summer months. Unfortunately they seem to abandon their noisiness when they come to the south, but they cannot fail to amuse those who take the time to watch the ease and gracefulness with which they dive and otherwise behave in the water. They are nearly three feet long and appear to be mostly black with slender agile necks and long stout beaks. When they dive, do they come up at a distance away from the direction they were facing when they went under, or do they possibly change the direction considerably while under water?

The baseball season may be ending and the football season be beginning in October. Youngsters will substitute almost anything spherical for baseballs or footballs when the emergency arises. It might be interesting to keep a list of the natural sources of this emergency equipment. Last fall, during the height of the world series, I remember well a highly interesting ball game played by a bunch of youngsters near an osage orange tree which had shed its ball-like fruit clusters. The shape of these fruits was too tempting to be resisted, and they were hurled at the batter with startling and somewhat alarming results. Excellent opportunity for studying plant anatomy offered itself to the passer-by shortly after, but few availed themselves of the privilege. It might interest you to see the great variety of structure which enters into ball-like bodies. Is the sycamore, for example, like the osage orange or like the orange in this respect?

BOB WHITE HIMSELF

SYCAMORE

Of course woody plants are interesting in October because of their leaves as well as because of their fruits. By the end of the month, most of the leaves which are to fall will have fallen. Some trees like the oaks, beeches and a few others that one expects to shed leaves seem to try to be different and retain the foliage even though the leaves have died. Does it seem possible for you to draw any generalization as to the part of the tree that tends to hold the leaves on the longest, whether this refers to an oak that holds its leaves for a considerable time or a maple which may shed them more thoroughly. You might like to try the stunt of guessing with a friend as to which of two trees in front of your home will be the first to have shed every leaf. This may get you into a most interesting competition, particularly if the last few leaves are unusually persistent.

Falling leaves always lend themselves to interesting observations. Some seem to come sailing down from on high like swift-gliding toboggans. Others come down with a crazy flip-flop; still others, with a spiral motion. In this connection, we should remember that the needles of larches which are shed are just as much leaves as the leaves of maples. It may interest you to see how far from a tree you may find its leaf. Where but one specimen of a rather unusual type occurs in a mixed forest this may readily lend itself to a game of leaf identification and distance judging.

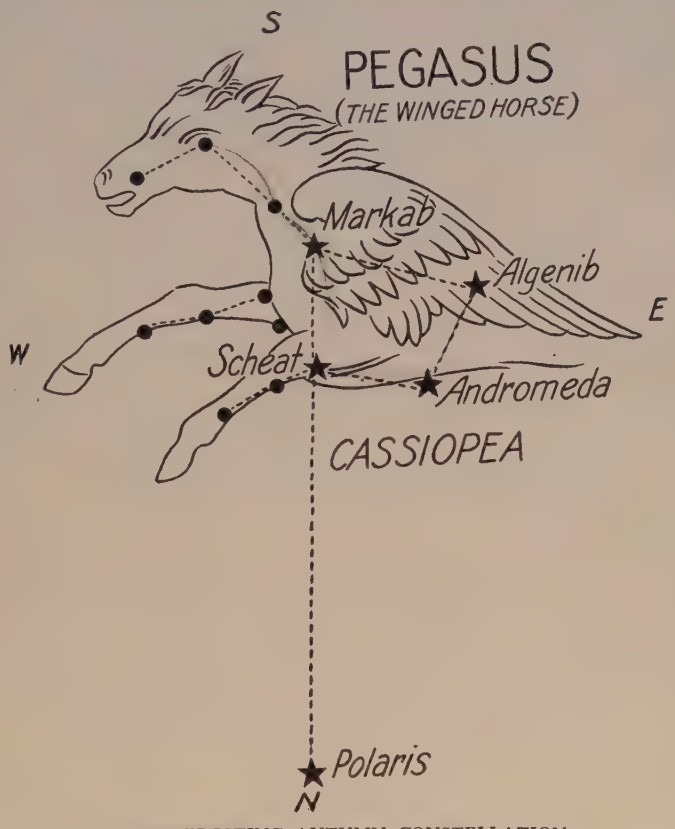
PEGASUS AND THE OCTOBER SKIES

By Isabel M. Lewis

PEGASUS was the winged steed that brought Perseus to the rescue of Andromeda, daughter of the royal pair, Cepheus and Cassiopeia, who had been forced to chain her to the rocks, as a punishment for her mother's vanity, and to be devoured by Cetus, The Sea Monster. Even as Perseus flies to the rescue, the creature may be seen raising his ugly head above the waves as he approaches to claim his victim. At this time Perseus was returning from his adventure with Medusa, the snaky-locked Gorgon that guarded the tree of golden apples in the garden of the Hesperides. Pegasus, though a mild and gentle steed apparently, sprung from the blood of the Gorgon's head which Perseus had severed and placed in his bag, and which he carried at the time of his rescue of Andromeda.

Later Pegasus became the charger of Jupiter and was finally presented to the Muses by Minerva. He, thereupon, took up his abode on Mt. Helicon and with one blow of his hoof opened up the fountain of which all poets must drink before soaring on the wings of Pegasus. Here he was one day captured by the bold Bellerophon with the golden bridle of Minerva, while drinking at the well Pirene. Mounted on Pegasus Bellerophon vanquished the Chimaera and then, made arrogant by his success in slaying this frightful creature, he undertook to fly up to heaven.

Jupiter, however, was incensed by the presumption of the youth and sent a gadfly to sting Pegasus. This caused him to throw his rider, who then fell to earth and for the remainder of his life wandered about lame and blind.



AN INTERESTING AUTUMN CONSTELLATION

Pegasus, winged horse of mythology, had a varied career, as fascinating to read as is the stellar body to study.

The four stars of second and third magnitude in the body of Pegasus mark the corners of an enormous square which is known as The Great Square in Pegasus. This may be seen high in the eastern sky in the early evening hours of October and is one of the most interesting configurations of the autumn skies. The star in the northeast corner of The Great Square does not belong to the constellation of Pegasus, but is Alpha in Andromeda and marks the head of the maiden who is leaning upon the shoulders of Pegasus. A line drawn from this star, Alpha Andromedae, diagonally across The Great Square brings us to the star Alpha Pegasi in the southwestern corner, and the continuation of this line passes through two fairly bright stars close together in the neck of Pegasus and a third, Theta, in his ear. Not far distant to the northwest is a bright star of second magnitude, Epsilon, that marks the nose of Pegasus. The forelegs are in the northwestern part of the constellation and are marked each by two stars of third and fourth magnitude. The star Alpha Pegasi in the southwestern corner of The Great Square and Beta Pegasi in the northwestern corner are in a way similar to the Pointers of the Big Dipper, for a line passed through them and continued northward leads to the North Star, Polaris.

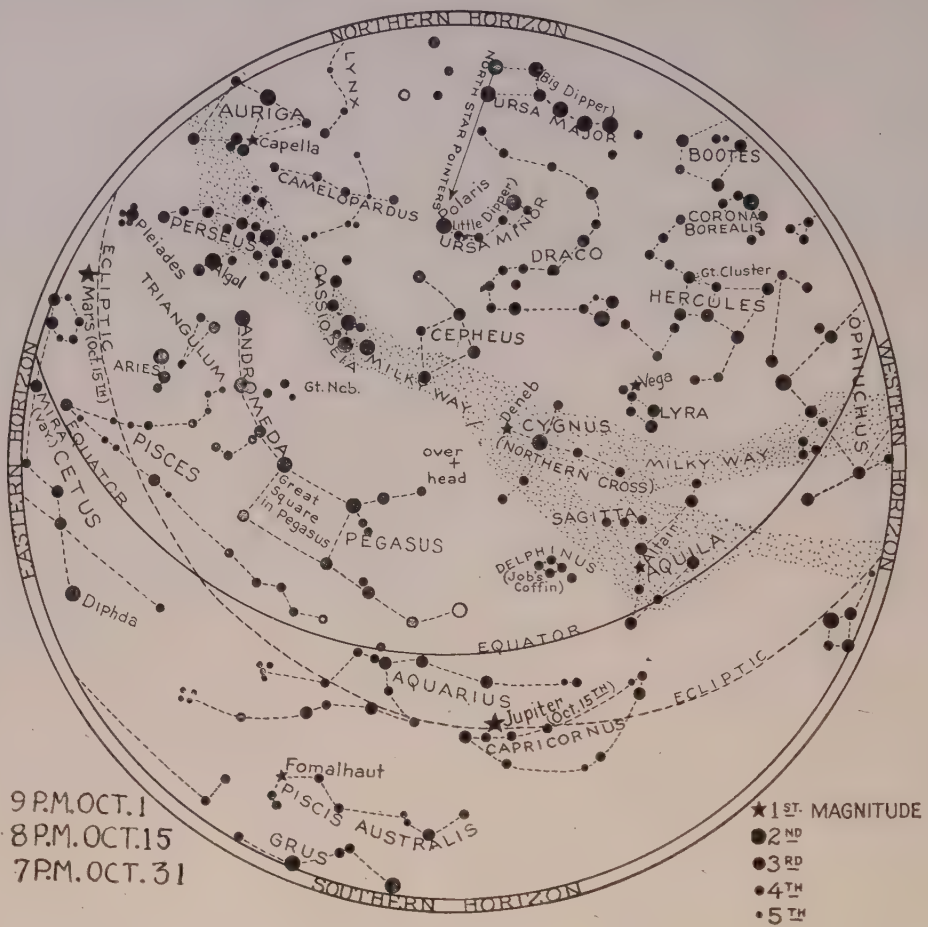
Although there are no stars brighter than the second magnitude in Pegasus, the outline of this interesting constellation may easily be made out with the aid of the star map and drawing. A further aid in locating it is the compact little diamond-shaped group a little to the northwest of the head of Pegasus known as Delphinus, The Dolphin, or Job's Coffin.

Of particular interest this month is the planet Mars which will make its nearest approach to the earth on October 27, though it will not come into opposition to the sun until November 4. When nearest to the earth this month, Mars will be at a distance of 42,625,000 miles. It will then be about 30 per cent brighter than Sirius, the brightest of all the stars, and almost exactly equal in brightness to the planet Jupiter which will be above the horizon also during the evening hours so the two planets may be compared in brightness. There will be practically no change in the brightness of Mars during the latter part of October and the early part of November, as it passes along that part of its orbit nearest the earth.

Two years ago Mars made nearly, if not quite, its closest possible approach to the earth when it was less than thirty-five million miles distant. Although now over seven million miles more distant from the earth than at the opposition of 1924, Mars is still very favorably placed for observation, and many telescopes are now being trained on the surface of our near planetary neighbor by those interested in studying its surface markings and their seasonal changes, which seem to indicate the existence of some form of vegetational and possibly animal growth. The atmosphere of Mars is very much rarer than that of the earth, however, and it contains very much less water vapor, and life, if it exists on Mars, must be very different from what it is here on earth.

After its nearest approach to the earth this month, Mars

will again recede from the earth and decrease in brightness and will not again come into opposition to the sun and on the side of its orbit nearest the earth until December, 1928. In that year at nearest approach, it will be more than fifty-four million miles away and inferior to Sirius in brightness. Fifteen years more will pass by before Mars will again be as near to the earth and as favorably placed for observation as it is now. So everyone will be interested in observing Mars at its best this month and next. Mars is now in the constellation of Aries and rises in the northeast early in the evening. It will be easily recognized by its fiery red color and its superior brilliancy, far exceeding that of any other object in its near neighborhood. Jupiter, which is now only a shade brighter than Mars, will be seen at the same time in the constellation of Capricornus in the southwestern sky. Jupiter is yellow in color and shines without scintillation of sparkling, which is a characteristic of all the planets.



TO USE HOLD THE MAP OVER HEAD WITH TOP TOWARD THE NORTH

The planet Saturn, which has been conspicuous in the southern sky throughout the summer, is now far over in the southwest at sunset and will be found with difficulty before the month is over as it draws in toward the sun.

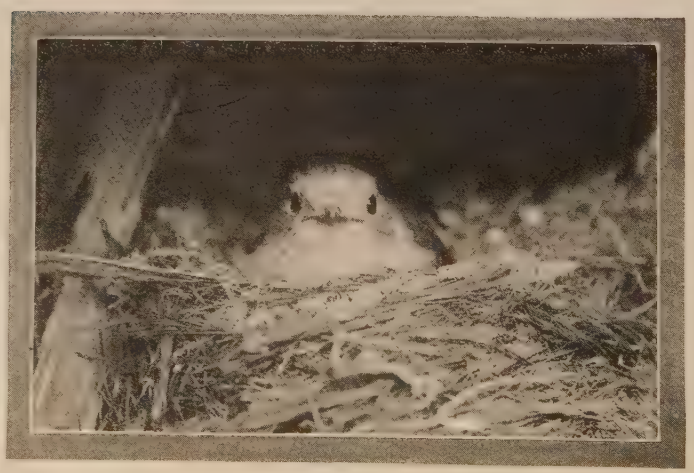
Venus may still be seen in the eastern sky before sunrise but it also is drawing in toward conjunction with the sun and will be lost to view in its rays next month.

A constellation of special interest this month is Piscis Australis, The Southern Fish, which contains the first magnitude star Fomalhaut, one of the twenty brightest stars. This star will be found in the southern sky some distance southeast of Jupiter, the only star of first magnitude in view in this part of the heavens.

Australian Robin

By Kilroy Harris

IN AUSTRALIA there are many kinds of robins whose breasts flame with much brighter color than the English or European red-breast, whose spring coming is the herald of milder days not far away. Of these, the flame-breasted or scarlet-breasted robins are most commonly seen in the great island. They are friendly little birds, often choosing places close to houses for their nests. The flame-



breasted robin pictured here—and the half-tone illustration can do it but scant justice—was photographed on its nest in a wood pile in the Lilydale district in the State of Victoria. While perhaps not as spectacular or "different" as many of the Australian birds, this little fellow is in reality a distinguished avian citizen of the island continent and one of which her citizens are quite justifiably proud.

AMERICAN NATURE ASSOCIATION ACTIVITIES

AS THIS issue of NATURE MAGAZINE goes to press, the Finley-Church Expedition under the auspices of the American Nature Association is in the fastnesses of Mount McKinley National Park in south central Alaska. With this trip it is completing a most successful quest for stories and striking photographs on the treeless islands of the Bering Sea and the Alaskan coast. By the time this issue is in the hands of the Association's members, Mr. William L. Finley, Mr. Campbell Church and other members of the expedition will have returned to Oregon with a wealth of material to be passed on to their fellow-members through the pages of NATURE MAGAZINE and beginning with the December issue.

* * *

In the interest of general and popular education the American Nature Association has been contributing a daily illustrated newspaper story to nearly five hundred newspapers throughout the United States. These stories have been running under the title of "Queer Quirks of Nature." If your local paper has been running these stories, you are acquainted with their character. If not, ask the editor about them. They are distributed through the Newspaper Enterprise Association.

* * *

With the reopening of school there is particular interest attached to the Educational Leaflets prepared by our artist, R. Bruce Horsfall, for the American Nature Association. Two of these leaflets have already appeared as an integral part of NATURE MAGAZINE—the insects in the July issue and the birds in the September issue. They will appear every other month and cover the following subjects in the coming twelve months—small mammals, hawks, members of the cat family, marsh birds and waders, fishes, amphibians and hoofed and horned mammals. These leaflets are in a form suitable for cutting up for school notebook use, having the descriptive matter for each picture on the back for copying by the Nature student. They are available in separate form in single copies or larger lots on a scale of cost prices.

* * *

One of the objects to which the American Nature Association and its members are dedicated is forest conservation. It is a vital issue affecting our economic and social lives at their very foundations. Our correlative educational organization, the American Tree Association, has been carrying on a notable work in presenting the facts of the forestry situation to the public. Under the leadership of Mr. Charles Lathrop Pack it has been responsible for an important part in the general awakening of Americans to this issue. In this connection the American Tree Association has published and distributed nearly one-half million copies of *The Forestry Primer*. This book sets forth simply and attractively the problem as it confronts us. This booklet is available to members of the American Nature Association on request, and copies in bulk can be obtained by school officials for school use.

* * *

A considerable number of members have availed themselves of Bulletin Number 25 on How to Form a Nature Club. Copies are still available to members on request. The bulletin contains many interesting suggestions for local activity.

* * *

Feeling that the need of public education on the importance of wild life protection and conservation is a vital need, the Association has maintained for several months an exhibit at Atlantic City. Through this, literature of educational character has been distributed and has proved to be a highly successful educational endeavor.

* * *

This page will from now on be a regular feature of NATURE MAGAZINE, serving at once as a means of acquainting the members of the American Nature Association with the activities of the Association and providing a place for brief reports from members on the work of local organizations in which they are interested

Our Director of Nature Education, Professor E. Laurence Palmer, leaves shortly on a trip through Arkansas, Michigan, Iowa, Minnesota, Colorado, California, Oklahoma and Texas to present educational material before teachers' and Parent-Teachers' conventions. In the last few months Professor Palmer has lectured and shown educational motion pictures before Boy Scout groups, Farmers' Week conferences, camp groups and a variety of educational organizations. During August he visited a number of eastern boys' and girls' camps in connection with the survey of camp Nature work the Association is now conducting.

* * *

Members of the American Nature Association visiting Los Angeles and vicinity will find many fellow-members and a community of interest by attending the meetings of the Nature Club of Southern California. Details about the club's current activities can be obtained from Dora A. Dayton, 3915 Walton Avenue, Los Angeles. The telephone number is Vermont 9010 before eight in the morning or after six in the evening.

* * *

Mrs. D. G. Casseres of Cartago, Costa Rica, C. A., would like to get in touch with fellow-members whose hobby is the collection of ferns.

* * *

As an indication of the importance of the Boy Scout camps in the general field of Nature knowledge and conservation, we are interested in the report of the Committee on Camping of the District of Columbia Council. This report is made by Dr. Paul Bartsch of the United States National Museum and the Consulting Staff of NATURE MAGAZINE. The summer's work at Camp Roosevelt, Camp Wilson and at the several troop camps has been notable in its success. This activity is typical of the nation-wide work being done.

NATURE EDUCATION

Appeal to the Farmer

A special plea to the farmer is made in the pamphlet issued by the Woman's National Farm and Garden Association in cooperation with the National Committee for the Restriction of Outdoor Advertising. This bulletin urges the farmer to protect the beauty of the landscape by refusing to permit barns and outbuildings to be plastered with garish signs. Frequently, it is pointed out, these signs are posted without the farmer's consent. The National Committee offers a neat marker with the legend "Post No Bills" to any farmer who wishes to write to it at 119 East 19th Street, New York City. Copies of the pamphlet may be obtained from the same address.

What Star Is That?

Frequent requests are received from members interested in the heavens for simple and yet complete star maps. To satisfy this demand we have endeavored to find an effective, concise, accurate and easily used chart of the evening skies. We feel that this is admirably accomplished in The Constant Star Finder prepared by Mr. David Fleming. It is a work on which its author has expended much research, discarding complicating nonessentials and producing a workable chart which at the same time is of use to the lay astronomer and has the approval of professional astronomers. Copies of this chart can be obtained by sending twenty-five cents to David Fleming, P. O. Box 271, Hyattsville, Maryland.

Club's Name Changed

At the regular meeting of The Los Angeles California Nature Club it was unanimously voted to change the name of the organization to The Nature Club of Southern California, as more representative of its membership which has spread to many cities and towns in the southern part of the state.

Readers:

If you do not find advertised in these columns things you need, write and tell the Editor.

He desires such information.

Brand's Peonies

Acres of Beautiful Blooms

The above view of one of the Brand Peony Farms was taken the last week in June, 1924, a week after the National Peony Show at Des Moines, Iowa.

The World's Most Beautiful Peonies

Never before in our more than fifty years growing peonies have we had such an unusually large assortment of wonderful choice varieties as we are offering for this fall planting. Flowers from this stock, competing with those entered by all other growers, won the three highest prizes at the greatest National Peony Show ever held.

Brand's Peonies awarded Gold and Silver Medals at National Peony Show. Brand's Peonies awarded Grand Sweepstakes at St. Paul Peony Show. Brand's Peonies awarded American Peony Society Medal at Minneapolis Peony Show.

You will want some of these, the world's choicest and most beautiful peonies, for your fall planting, therefore, write today for Brand's Free catalog of Peonies and Iris, giving varieties with full description, and prices.

BRAND'S BIG PEONY MANUAL, which we consider the most complete and up-to-date work ever written on the Peony, gives the history of that flower, its culture and varieties. This also will be sent free to all who intend to purchase roots this fall who ask for it.

Growers of Peonies for nearly sixty years

THE BRAND PEONY FARMS
BOX 26, FARIBAULT, MINN.

BULBS

For Fall Planting

Buckbee's "Full of Life" Bulbs grow anywhere. Never has our stock been of finer quality nor ever before offered at these low prices. Our

DARWIN TULIPS

are of highest quality gigantic, bright blooms on long strong stems. Immense in size, exquisite in form and coloring.

Special Offer We will mail postpaid the following mixed varieties:

50 Darwins, 17 Prize Varieties for $1.77
100 Darwins, 17 " " " 3.24
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100 Breeders, 20 " " " 4.86

Special prices on larger quantities. Mail your order today. Prompt shipment guaranteed. Write today for free copy of our new Fall Bulb Catalog. Tells all about Buckbee's "Full of Life" Tulips, Hyacinths, Narcissus, Paeonies, Jonquils, Crocus, Lillies, Hardy Perennial Plants, Decorative House Plants, Seeds, Etc.

H. W. BUCKBEE, Rockford Seed Farms
Bulb Dept. 115 Rockford, Illinois

HOLLAND BULBS

Giant Darwin Tulips, in mixture, 40 for ..... 100 for $2.00	$1.00
Narcissus, single or double, 30 for ..... 100 for $3.00	$1.00
Hyacinth, assorted, bedding size, 15 for	$1.00
Potting size, 10 for	$1.00
Peonies, 3 to 5 eyes, 3 for	$1.12
German Irish, 12 for	$1.00

Postpaid

P. S. BIRCH
Laurel Springs, N. J.

Wohlert's Flowering Trees

America's Finest Collection

We furnished the Japanese Government with more than 1500 flowering trees which they presented to Philadelphia in honor of our Nation's 150th Birthday. You can have these same gorgeous trees in your own garden. We have Japanese Rose Flowering and Weeping Cherries, and Flowering Crabs, in all varieties and sizes.

Our prices are surprisingly low.

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Home Grown Bulbs

Pedigreed Stock

Virginia's best old-fashioned bulbs, pioneered to Kentucky, then to Missouri in 1849. This stock, improved by culture, include

DAFFODILS "Golden Candlesticks" "Pheasant-Eye"
Purple Spanish Iris, Lily of the Valley
and other bulbs.

Write for "Ye Little Price List"

MISS BETTE COOPER
Lee's Summit, Mo.

A CALL TO THE TREE PLANTERS

Now is the time to make your plans and map your programs for the work

PLANS for tree planting are now under way in many parts of the country. In Georgia, Florida, Kentucky, Louisiana, North Carolina, South Carolina, and Texas there are set Arbor Days during the fall and winter months.

Two normal seasons for planting deciduous trees are spring and fall. The advocates of either season have many arguments to advance for the success of their operations, but as a rule it is safe to say that all trees except the evergreens may be planted at any time during the dormant period when it is possible to work the soil, i.e., when not frozen. This period begins with the dropping of the foliage in the autumn and ends when the buds burst in the spring.

The American Tree Association, which welcomes you to membership in the tree-planting army, will send you tree-planting instructions and an application blank for membership. There are no dues, and the only way to join this national organization is to plant a tree and register it on the association's honor roll. The bulletin carries a diagram showing exactly how you should plant the tree. This bulletin should be in the hands of Scout leaders and all organizations planting this fall.

As an example of what is being done in tree planting let us look at what the people of the State of New York did during the spring of 1926.

A fine illustration of what can be accomplished in reforestation by a municipality is the watershed forest of the village of Carthage. In the foothills of the Adirondacks, fourteen miles from the village, are located the headwater springs of Indian River. Many years ago these springs and two thousand acres of land were purchased by the village for a pure water supply.

To protect the watershed of these springs, J. G. Jones, superintendent of the state reservation at Saratoga Springs, proposed they be reforested, and the proposal was supported by F. J. Quinn and P. R. Wrape. In 1910 the reforesting was begun with a plantation of 75,000 Scotch pine trees, and plantings have been made every year since with the result that, up to the present time, the Carthage watershed contains more than six hundred acres of planted forests and is, as far as known, the largest planted village forest in the United States. The American Tree Association will send its Town Forest booklet to any official interested.

The number of trees planted from the state nurseries of the Conservation Commission was 16,987,250, which was 8,491,900 more than were planted during the spring of 1925. The largest percentage of increase is shown in school forests and the state's plantings in the Forest Preserve.

The largest increase planted by any one class was by private landowners who planted 8,464,800, or more than double the number planted by private landowners a year ago, when the total was 4,152,250.

Municipalities this year more than doubled their plantings of a year ago in public forests, making a total of 2,311,400 trees, as compared with 1,053,700 trees in 1925.

Plantations by industrial concerns that depend upon the forests for their raw material totaled 1,417,300, an increase of 89,700 over a year ago.

School districts in the rural sections of the state increased their plantings over a year ago more than sevenfold, planting 227,700 trees as compared with 28,700. The importance of planting school forests for the ultimate purpose of reducing or eliminating school taxes in rural localities where cheap land is abundant, was the subject of a special Arbor Day proclamation by Frank P. Graves, Commissioner of Education, and forty-seven schools either started new forests or made new plantations in forests already started.

Boy Scouts planted 70,600 trees, more than doubling their reforesting activities of a year ago, when their total plantings amounted to 31,000.

Kansas Women Begin Forestry Study

Members of the Kansas Federation of Women's Clubs are the first to report on the study of the forestry question this fall.

At the request of Mrs. A. C. Coolidge, Smith Center, chairman of the Division of Conservation of Natural Resources, Charles Lathrop Pack, President of the American Tree Association, sent Forestry Primers and other printed matter to the District Chairmen for their fall meetings which are being held in all the districts this month. These officers are: Mrs. A. H. Nausbaum, Mrs. W. F. Wilkerson, Mrs. L. P. Becker, Mrs. Frank Atkinson, Mrs. Ed Armold, Mrs. J. B. Hungate, Mrs. R. W. Josserand, and Mrs. C. F. Hough.

In addition, application blanks for membership in the American Tree Association were sent. The only way to join the tree-planting army is to plant a tree and register it on the association's national honor roll. There are no dues. The Association will send anyone free tree-planting instructions for a stamp.

Miscellaneous plantings made by all classes and not otherwise enumerated totaled 766,000 trees, or 338,850 more than were planted under this head a year ago.

A year ago industrial plantations led municipalities by 273,900 trees. This year municipalities led industrials by 894,000 trees. The increased interest shown by cities, town, counties, villages and rural school districts in reclamation of idle land by reforesting has been one of the outstanding features of the remarkable activity of the first half of 1926, which is the fiftieth anniversary of the beginning of forest conservation.

There are now growing in the Conservation Commission's three forest nurseries at Saratoga Springs, Lowville and Lake Clear, 90,000,000 young forest trees, of which 40,000,000 will be ready for planting next year.

With such a recital of good work done, what can you do in your state? The New York report shows what individual planters and Boy Scouts are doing there. Tree planting needs only a leader in a community. In most all of these communities nurserymen have fine stocks to choose from. State nurseries, as a rule, can furnish only very small stock.

A fine suggestion on how to arouse interest in tree planting comes from Springfield, Mass. Tree planting with seed beds and nurseries as features in the school work program has been instituted.

Miss Fannie A. Stebbings, supervisor of Nature work in the schools, believes that this will be extended to the schools throughout the city. So far as known, this departure is the first example in the country of such work pursued in a definite and systematic way by public school pupils.

A plot of land was set aside in Forest Park for the planting of trees, and seedling-trees were provided from the state nursery at Amherst. Several thousand trees have been planted on the plot.

Seed beds will be established wherever land is available near the school buildings. Seeds gathered by the pupils may be planted there and the seedlings transplanted later. Plans are in the making to establish other small nurseries near various schools, similar to that started in Forest Park. Zenos E. Scott, superintendent of the school system, is watching the experiment with great interest.

Tree planting, many times, is but a matter of inspiration. Your planting of trees prompts others to plant. Let the tree-planting army again furnish the good example. Tell your friends to send to the American Tree Association at Washington for the tree-planting instruction so that they may celebrate the centennial of Arbor Day in 1972 by planting the trees now.

A Banner Year

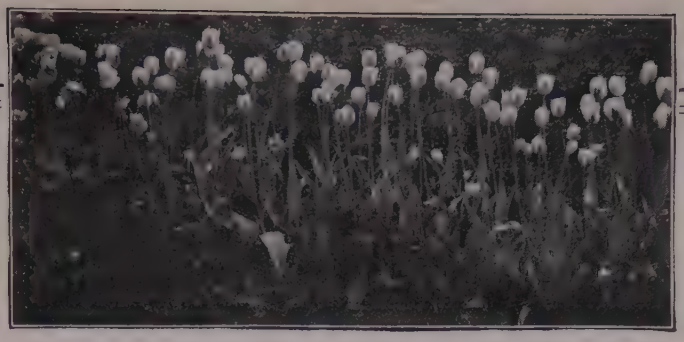
The receipts for the eighteen National Forests of California for the past year ended June 30, 1926, exceed by $289,600 the record for the previous year, and is the largest annual revenue ever received from federal forest resources in California, reports the San Francisco District Headquarters of the Forest Service. One-fourth of this amount, or $319,060, will be returned to the state by the Federal Government for road and school development in the counties in which the forests are located, and an additional $127,624 will be expended by the Forest Service in road and trail construction in those counties. Timber is the best-paying resource of the National Forests of California, with grazing holding second place, closely followed by revenues from summer home and other forms of recreational use. The four largest revenue-producing National Forests, all of which are located in the timbered regions of the Sierra Nevadas, are Lassen, Stanislaus, Plumas and the Sierra.

A Correction

The picture used on page 160 of the September issue carried the caption, "Tomato Caterpillar Laden with the Eggs of Some Parasites." That this was inaccurate was not discovered until after the magazine had gone to press, and we wish to call the attention of our readers to the fact that the small white objects on the back of the caterpillar are not eggs but the cocoons spun by the larvae of a tiny parasitic wasp which lays its eggs in the body of the caterpillar. These eggs hatch in a few days, and after feasting on the tissues of their host, bore out and spin these tiny cocoons, from which they will soon emerge as adults.

Conference Date Set

Secretary of the Interior Work, with the approval of the President, has designated the week of April 11 to April 16, inclusive, 1927, as the date for the Pan Pacific Conference on Education, Rehabilitation, Reclamation and Recreation, to be held at Honolulu, Hawaii. The general purposes of the conference contemplate a mutual discussion of common problems relating to schools, reclamation, rehabilitation, and recreation. It is hoped that the conference will prove a medium of better understanding and relationship between the United States and its neighbors in the Pacific, and will strengthen the territorial administration in Hawaii and other Territories.



Shumway's "Pedigreed" Bulbs

Produce the Anticipated Results

Contracts with the Holland growers specified largest sizes. Therefore in ordering you are assured the choice of their stock.

Plant bulbs in quantity this fall for a gorgeous display of radiant blooms next Spring. For your consideration a selection of a few of the outstanding varieties of Darwin and Breeder Tulips are listed below.

Name	Color	Price per Hundred
Pride of Haarlem	Rose Carmine	$4.50
Clara Butt	Salmon Pink	4.25
Valentin	Light Violet	6.50
Dream	Delicate Lilac	4.50
Bartigon	Carmine Crimson	5.75
Baronne de la Tonnaye	Vivid Pink	4.50
Inglescombe Yellow	Clear Yellow	4.50
Golden Bronze	Golden Hue	5.00
Cardinal Manning	Rosy Violet	5.00
Zulu	Almost Black	4.25

Special collection of above:
1000 bulbs—100 of each - $42.00
500 bulbs— 50 of each - 21.50

Superfine Collections
Largest Size Bulbs

	Varieties	100	50
Darwin Tulips	15	$3.75	$1.95
Breeder Tulips	10	4.00	2.10
Cottage Tulips	8	3.50	1.85
Crocus	5	2.50	1.20
Narcissus	5	9.75	5.00

All Prices Include Transportation Charges to Your Home

Catalog illustrated in colors lists a great variety of Tulips, Narcissi, Hyacinths, Crocus, Peonies, Lilies, etc. Sent free on request. Write for it today.

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Field-Grown ROSES for Fall Planting

The man or woman who succeeds best in any undertaking is the one who looks—who prepares ahead, who, in fact, does things in the right way and at the right time.

No less disinterested authorities than the editor of this and other like magazines, and Dr. J. Horace McFarland, editor of the *American Rose Annual*, recommend and even urge the Fall planting of field-grown roses.

Peterson Roses have a reputation, approached by no others, for living and thriving when Fall planted.

Surely when people in Maine and Vermont, as well as in less severe climates, can plant our roses in the Fall in lots of 50 to 150 with the loss of but one plant or none at all, you, too, can succeed.

AND, IF YOU HAVE DOUBTS, I'LL GUARANTEE YOUR FULL SUCCESS.

Full details in the 1926 Fall edition of "A Little Book About Roses" sent on request.

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Rose and Peony Specialist **Box 65 Fair Lawn, N. J.**

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That you saw his advertisement in NATURE MAGAZINE, when you answer the advertisement.

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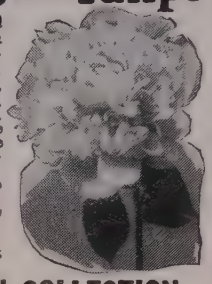

More than a thousand varieties to choose from—one of the largest collections in the world. Delicate in fragrance, rich in tint and color, infinite variety in shade, gorgeous in bloom. The aristocrats of all the peonies. Every one guaranteed true to name. Every one a gem. The Old Garden Collection listed below is a rare bargain. You'll agree when you see what amazing values you get at such low prices.

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Albert Crousse—pink....$1.00
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FREE BOOKLETS.—Be sure to get our beautiful Fall Catalogue; also our booklet "Peonies for Pleasure." Every lover of flowers should have them. Send for them today. They're FREE.

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Plant Peonies

Grow Anywhere—In Any Soil

Hardy—Large blooms and more of them each year. No flower grown attracts as much attention as the Peony. We are growing this year the best collection ever grown on our Peony Farms.

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Giant Paper Whites, 10 for $1 or 100 for $8.

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Mice Use Cash Register

Out in Mount Rainier National Park the white-footed mice have learned to use the cash register, so says the *Park Nature News and Notes.* This doesn't indicate, however, these mice have become educated in the use of mechanical devices. Upon investigating the cause of the register not working properly, it was found that the mice had stored such a quantity of watermelon and other seed in the recesses of the machine, as to interfere with the proper running up of the cash.

Purple Martins Victims

Apparently the prevalent "crime wave" is not sufficiently active in Atlanta, Ga., to give at least two local policemen opportunity to use their firearms. R. C. Steele, of Lakemont, Ga., calls our attention to an unfortunate occurrence in the southern city. Large numbers of purple martins, migrating south, have been accustomed to find Atlanta an hospitable stop, returning the favor of hospitality by feeding on beetles, leaf weevils, and other injurious insects. This year, however, the martins suffered severe losses to their ranks at the hands, or guns, of two policemen. While the killing of the birds is greatly to be regretted, the protest aroused has served to educate not only the police force but many Atlantans, as well.

The Moth-atorium

Moths, long considered the worst enemies of upholstery, will be barred forever from their pastures of plush and velours if a recent adaptation of electricity becomes generally popular among furniture dealers. This new contrivance, called a Moth-atorium and made possible by easily regulated electric heat, aims at killing the eggs and larvae of the moth before they have a chance to start their eating activities.

Heads New Station

After fifteen years of practical experience in the important phases of forestry research and fire control, as an officer of the California District, U. S. Forest Service, Edward I. Kotok has been appointed Director of the new Forest Experiment Station to be established in California, according to an announcement of the Chief Forester, Col. W. B. Greeley.

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It is universally attractive to children from 3 to 12

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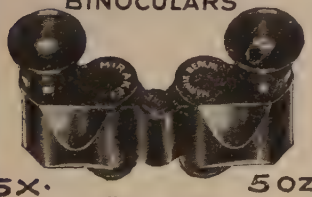

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Mountain Named for Scouts

Out in Sequoia National Park there is what is believed to be the only mountain in America named after the Boy Scout organization. This is Eagle Scout Peak, which rises 12,050 feet above sea level and looks down into Kern Canyon and the Kaweah River. Its heights had never been scaled until July 15 of this year, when Frederick Armstrong, Coe Swift and Eugene Howell, all Eagle Scouts, climbed it. The peak is now named on the Geological Survey maps for the organization that is doing so much for American boyhood.

The Wisdom of Grackles

By M. F. Baker

Do all grackles carry their food to water and wet it before eating? Or is the renowned Florida climate a mental stimulant to the birds? Florida grackles have the amusing habit of bringing food to our bird bath and dipping it in the water. Even acorns are repeatedly dropped in the water, left for a few seconds, and taken out. During nesting time this year the grackles brought many crusts of bread from a neighbor's garbage can, held them in the water for a moment, ate part of the softened bread, and carried the remainder to their nests.

Report on Grouse

Under the direction of Dr. Alfred O. Gross, of Bowdoin College, and at the instance of the American Game Protective Association, an investigation has been made concerning the various factors governing the life of the Ruffed Grouse. Dr. Gross has made an interesting report of progress, details of which cannot be stated here owing to the limitations of space. Copies of the report and additional information can, however, be secured from the Massachusetts Fish and Game Protective Association, 3 Joy Street, Boston, Mass.

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You will help to build our advertising patronage by answering advertisements in NATURE MAGAZINE.

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***We need* CHAMBERLIN Metal Weather Strips"**

How often last winter was your house uncomfortably chilly because of the icy draughts that blew in around doors and windows? How often did you make up your mind that you would not go through such a winter again—but that next year you would have Chamberlin Metal Weather Strips? Don't forget now is the time to install Chamberlin Metal Weather Strips—now, before cold weather.

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Imported Japanese and American Fish. Aquatic Plants, Castles, Globes, Food, We make artistic aquariums suitable for beautiful homes, conservatories, schools, the office, etc. Illustrated circulars free.
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A Nature Puzzle

By Alvin L. Chittenden

The following Nature Puzzle conceals a slogan of two words. The answer will be published in the November issue of NATURE MAGAZINE.

My first is in catbird but not in towhee.

My second is found in the gay chickadee.

My third is in plover and heron so tall.

My fourth in bluebird with its song known to all.

My fifth is in sparrow but not in quail.

My sixth is in starling and little black rail.

My seventh is located in the manshy cuckoo.

My eighth is in woodpecker and cardinal, too.

My ninth is in flycatcher but not found in swallow.

My whole is a pastime all persons should follow.

Answer to August Puzzle:
LOVE THE BIRDS

Weather Vanes

The Eagle and Arrow design weather vane illustrated is made of copper, gold-leafed, to prevent corrosion. The wing spread is 20 inches. The Eagle is full-bodied with double thick wings.

Other sizes and designs in stock

Mail orders filled promptly

Write Dept. 10N

20-inch wing spread
Complete, $26

J.W. Fiske IRON WORKS
ORNAMENTAL IRON WORK
80 Park Place ~ New York
ESTABLISHED 1858

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No. 113

This charming and unique Scraper is a reproduction of a Colonial Foot Scraper. About 10 inches high, and all ready to attach to steps or porch.

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Send for circulars of other attractive animal designs and other articles

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ROBIN HOOD

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-L.E. Stemmler-Queens Village, L.I.-N.Y.
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Membership Nomination Blank

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ANNUAL DUES
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....., 1926

Secretary, American Nature Association,
1214 16th St., Washington, D. C.

I nominate for subscribing membership in the Association and to receive NATURE MAGAZINE:

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Address.....

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Name and address of
Nominating Member .....

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90% of the annual dues is designated for subscription to the magazine

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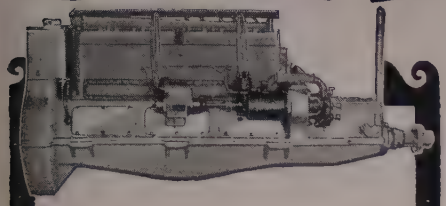

The Kermath Marine Motor has an unusually high standing. Whether in Boston or Bombay you will find Kermath users just as enthusiastic as you will find scores of them in Detroit.

There can be but one reason for this. Kermath's reliability. Whether east or west—at the ocean or on the lake—in torrid heat or frigid areas—at high altitude or sea level—it makes no difference. Each Kermath is always the same—reliable—economical—fool-proof—and an all-around joy to own and operate.

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50 W. 17th Street, New York City

A Kermath Always Runs

An Excellent Idea

Now that the whole United States has become a roving population during many months of the year, and more and more popular are becoming long auto trips through unfamiliar parts of the country, it is hoped that the example, set by Berrien County, Michigan, in placing small signs giving the name of the creek or river on both sides of the bridges crossing such streams, will become general throughout the country. It is not so long ago that the City of Washington began to mark each historic spot with a small signboard, tersely stating for what historic event the place was famous. Thus is saved the sightseer much reference to guide books and much questioning of guides or police. Why could not this become general throughout the country, and any place of general interest be marked in such a manner? To Mr. B. R. Thomas, President of the Thomas Commercial School of South Bend, Indiana, and authority on the roads, trails and rivers of that part of the middle west, we are indebted for calling this to our attention. It is hoped that Mr. Thomas will be successful in his endeavor to get South Bend and St. Joseph County interested, and that the plan will be adopted throughout the country.

Famous Totem Gone

The famous Totem Pole near Auburn, N. Y., which has so long been a Mecca for tourists, was felled recently in the big storm which swept that part of the state. Away back in 1911, Mr. Carr started this Totem Pole on his farm near Barber's Corners, by carving and coloring in natural tints a woman's head. For fifteen years Mr. Carr carved and colored, until all manner of wild life from an American eagle to a butterfly appeared in realistic manner on this unique tree, which the storm broke near its roots and tossed to the ground. Several other trees artistically carved and colored remain on the Carr farm. On one of these Mr. Carr has represented in natural colors many birds inhabiting that region.

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Advertising helps to make a magazine successful.

Therefore aid by answering advertisements in our columns.

100 POWER
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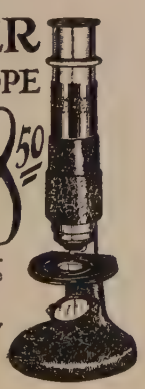
$8.50



Tiny insects become monsters while plant life reveals invisible mysteries and beautiful shapes and colors. American made, compact, adjustable, optically perfect, low in price, Wollensak Microscopes are ideal for students and scientists. At your dealer or sent, postpaid, on receipt of price. Literature free on request.

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Keep warm—keep dry!

The *weatherproof* Signal WINDBREAKER completely shuts out cold, wind, and drizzle. Made of specially close-woven, fleecy-lined moleskin—warm and very durable. One WINDBREAKER has given as long as six years' hard wear. One customer says, "It is the best, good-looking knockabout garment I ever wore; send me another." You can't get more for the money in any garment. Every outdoor man should send today for our folder illustrating the WINDBREAKER Shirt and Blouse styles. It's free; mail the coupon.

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A $50.00 Microscope

will do no more than this remarkable instrument for 7.50!

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At last the high powered microscope is within the reach of all who wish to study, observe and experiment with the vast world of minute objects that are invisible to the naked eye. A remarkable discovery enables us to manufacture the Ultralens Microscope (magnifies 225 diameters) for **one-eighth the usual cost.**

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COMPACT

The Ultralens Microscope comes packed in a beautiful Leatherette case with full instructions that any one who can read can understand. Lenses of 125 x and 325 x objectives can be furnished at $1.50 each.

ORDER TODAY

Order direct from this advertisement and get your Ultralens Microscope now. Fully guaranteed. If, however, you desire more information before purchasing we will gladly send free descriptive catalog.

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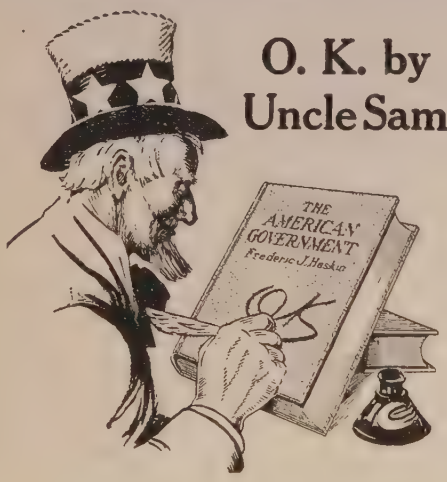

O. K. by Uncle Sam

THE AMERICAN GOVERNMENT

By FREDERIC J. HASKIN

The Book That Shows Uncle Sam at Work

While the failure of governments in many parts of the world is bringing misery to millions of people, the Government of the United States stands out as a tremendous success, the outstanding achievement in the world for secure, happy, peaceful enjoyment of liberty. Sovietism in Russia, anarchy in China, dictators in Italy and Spain, repudiation in Germany, bankruptcy threatening France and Belgium, unemployment and strikes in England. Amid this world of troubles, one nation stands supreme, on the crest of the greatest known wave of prosperity. Its government carries on as the greatest business enterprise in the world. How is it done?

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"The American Government" has 484 pages, including a 32-page section of beautiful halftone illustrations; 42 chapters; over 150,000 words. It is 8 x 5¾ inches in size and weighs nearly two pounds. It is set in new clear type and durably bound in green cloth. It is in a class with books that often sell for $3.00 or $4.00.

This unusual volume is sold through organizations and publications which offer it as a service to their members and readers at

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The American Nature Association has arranged to supply copies to all readers of NATURE MAGAZINE direct by mail, postpaid, at that price. Use the coupon.

American Nature Association
1214 Sixteenth St. N.W.
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Enclosed is one dollar (check, money order, or currency) for which please send me "The American Government."

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Spider vs. Pinch Bug

It took a medium-sized spider exactly seventeen minutes to subdue a black pinch bug three-quarters of an inch in length, writes Mr. L. B. Capps, of Gig Harbor, Wash., who witnessed the battle recently. The spider had woven a thread from the ceiling to the floor, and from the top of his web spied the pinch bug at the other end of the line. Like a flash the spider dropped and attached a line to the back of the unsuspecting bug, starting back up the line with his prize, enmeshing his victim with coils of web as he went. However, the pinch bug was something of a fighter himself and struggled valiantly to escape the shackles. Then came a fight to the death. The pinch bug would sever the strands almost, but not quite, as fast as the spider could weave them. By strategic maneuver the spider managed to keep the pinch bug drawn about two inches from the floor and to keep his own legs clear from the threatening pinchers, which more than once came near amputating them. After twelve minutes of this pitched battle, during which the spider several times was forced to reinforce his lines by weaving new threads to the top of the web, he had succeeded in encasing his prey's front legs in a mass of web. Still fighting pluckily with his hind legs, however, the pinch bug broke a thread with every clip of his hind legs. Mr. Spider, having tied up his opponent's front legs to his satisfaction, now turned his attention to those threatening hind members, bundled them up securely, and with the injection of a shot of spider venom into the subdued pinch bug, who deserved a better fate, the battle was won. The spider rested for a bit and then hauled his catch dangling from about three inches of web to his aerial castle.

Fire Losses Counted

One out of every four long-leaf pines, and one out of every nine shortleaf, in the virgin forests of the south bear visible fire scars, according to E. L. Demmon, of the Southern Forest Experiment Station, New Orleans. The experiment station has recently undertaken a study of the amount and extent of fire damage to mature timber. This damage to virgin timber is a substantial portion of the tremendous fire loss in the southern forests which, in 1924, amounted to 75.5 per cent of the total fire loss in the United States, and covered 84.3 per cent of the area throughout the country burned over by forest fires.

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HERE is your opportunity to find out how much talent you have. A simple, scientifically prepared questionnaire tests your natural sense of design, proportion, color, perspective, etc., indicating whether it will be worth while to develop your ability to draw, and showing how much training will be needed. You will be frankly informed as to what your score shows. This analysis may show you the way to a bigger future—a real career.

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Write today. ARTCRAFT STUDIOS
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Ozark Wild Life

The Ozark Wild Life Association has been formed with its first purpose to cooperate with the state and national authorities in protecting the colorful wild life of the hills, and with the dream of a future great plant preserve in the heart of the Ozarks with every native tree, shrub, vine, fern, and flower, growing upon it under natural conditions. Plans are already taking shape for the purchase of a tract where the Ozark Wild Life Preserve will be developed. Nature lovers interested in this plan may get details by writing to O. E. Rayburn, Kingston, Ark., editor of *Ozark Life*.

Two More Albinos

Albino birds and mammals are always interesting because they depart from the usual. Mr. W. L. White, of Cincinnati, calls our attention to two new reports of albinos, one an albino robin born in a nest in a tree in the back yard of P. N. Bathory's home in Youngstown, Ohio, and the other a white muskrat at the muskrat farm, Loon Lake, Okanogan, Wash. According to the report about the latter, the muskrat appears to be somewhat a king of the colony, and a search is being made for a white mate for it in the hope that the albinistic freak may become a habit.

Personality in Birds

By M. F. Baker

A blue jay, that doubtless to its companions seems "a little queer," has been recognized by us for three years as "The Old Soak," because of its frantic delight in splashing in the bird bath. Many times a day this bird comes to the bath and bathes furiously and repeatedly, until it has a most disreputable and water-logged appearance. Another blue jay, with equally marked mannerisms, seems to have decided that a bath consists in standing as high as possible in the water and cautiously swinging its head back and forth a few times where the water is shallow.

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Questions and Answers

The American Nature Association will be glad to answer each month such questions as its members ask about Nature.

QUESTION: *Can you give me some information about the dove-tree?*—M. M.

ANSWER: The dove-tree (*Davidia involucrata;* there is also a variety) was first discovered in western China fifty or sixty years ago by Armand David, a French missionary. It is a handsome tree of pyramidal habit with rather large bright green leaves and showy white flowers. These have neither petals nor sepals, the conspicuous part of the inflorescence consisting of two large white floral bracts. It has proved to be hardy, when planted in favorable soil, as far north as Massachusetts.

QUESTION: *Will you please describe and give the range of the death's head moth?*—W. D. S.

ANSWER: The death's head moth (*Acherontia atropos*) occurs in Europe, including England, western Asia and Africa. It is one of the hawk moths. The larvae feed on many plants, especially potatoes and other members of the family *Solanaceae.* The adult is four or five inches across the wings. The forewings are dark grayish-brown with irregular markings; hind wings and body yellow or orange with black stripes. On the forebody is a yellow spot resembling in shape a skull.

QUESTION: *Can you tell me what variety of crow or raven has a white spot on the back of its neck?*—J. D. M.

ANSWER: The bird is the white-necked raven, *Corvus cryptoleucus.* It is found only in the deserts and tablelands of the southwestern United States and northern Mexico. The feathers of the neck are white at the base and ordinarily are visible only when the bird moves its head in certain ways.

QUESTION: *How can one best press plants?*—H. A.

ANSWER: The object to be gained in pressing plants is to extract the moisture, and any absorbent paper will do this. However, most botanical collectors find it most satisfactory to use a special dark grey stiff blotter which comes the size of the ordinary herbarium sheet. A moderate supply will probably suffice, as they should be dried frequently and used indefinitely. For the double sheets which actually hold the specimens while drying, newspapers will do very well, and for emergency will serve as blotters.

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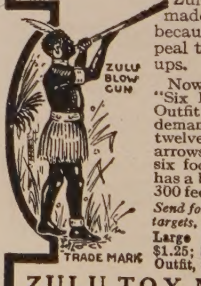

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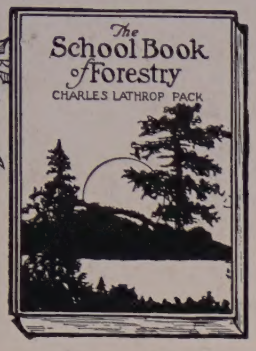

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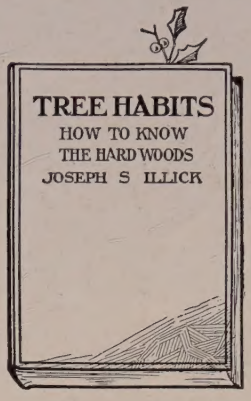

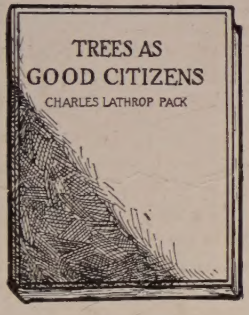

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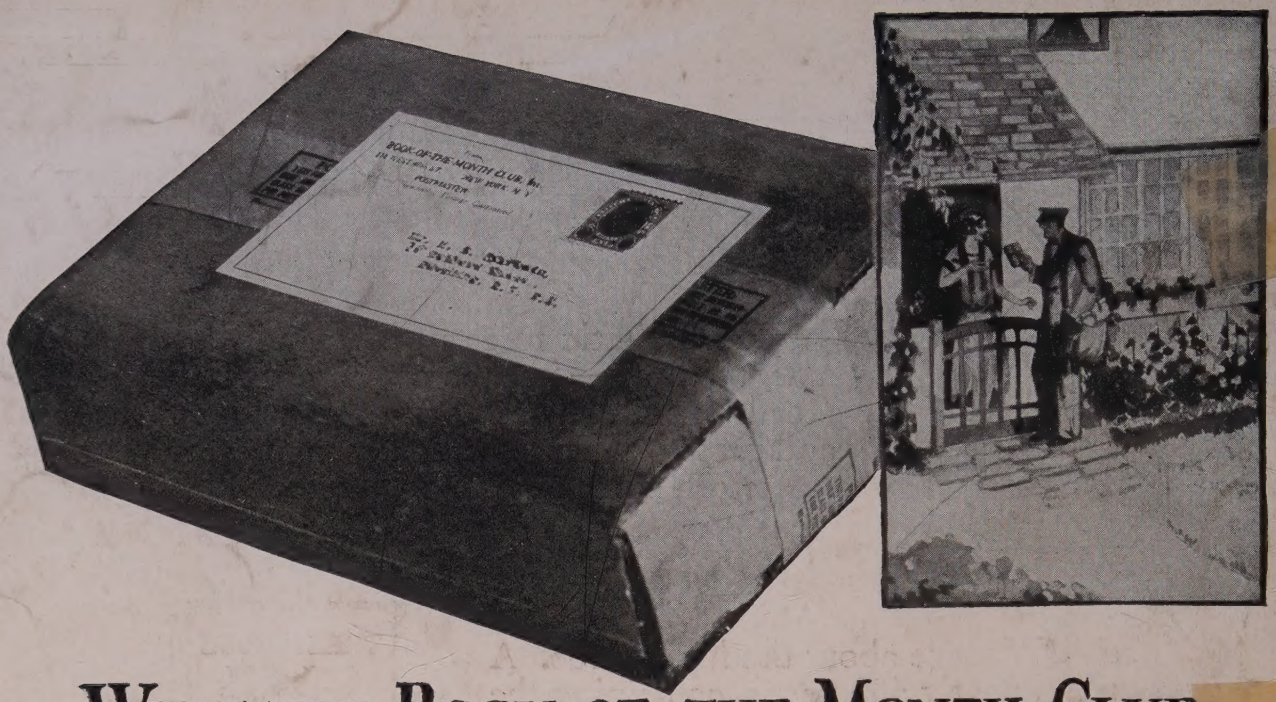

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